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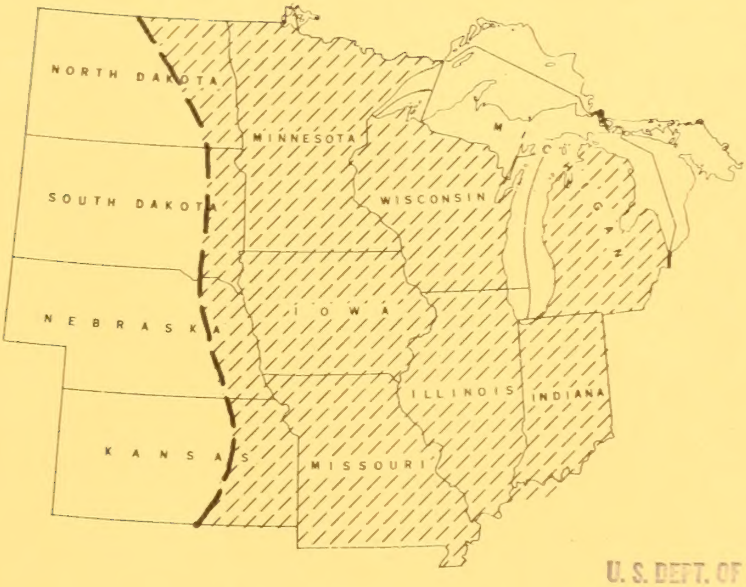
KEY TO THE NATIVE PERENNIAL GRASSES–

MIDWEST REGION EAST OF THE GREAT PLAINS

(Abstracted from Hitchcock's Manual of the Grasses)



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SCS-TP-151

OCTOBER 1968

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PREFACE

A guide, Key to the Native Perennial Grasses–Midwest Region East of the Great Plains, was prepared in 1965 as a working tool for SCS conservationists in the Midwest to use in identifying native perennial grasses found in their particular work area. The demand for the guide by specialists outside the Soil Conservation Service became so great, SCS decided to publish it.

The taxonomic key includes native perennial grass species found in Michigan, Wisconsin, Indiana, Illinois, Minnesota, Iowa, Missouri, and the eastern parts of North Dakota, South Dakota, Nebraska, and Kansas. To differentiate between native grass species and some exotic species having similar morphological characteristics, several of the more common exotic species are included in the key and illustrations. They are noted by "exotic" in parentheses.

Native grasses still are found in significant amounts in some parts of the Midwest region east of the Great Plains physiographic province though few species are found in any given local area. They occur primarily on nonarable grassland soil, in natural savannas, in cutover forest land, marshes, and bogs, and on abandoned cropland.

The taxonomic key was abstracted from Hitchcock's Manual of the Grasses of the United States, U.S. Department of Agriculture Miscellaneous Publication No. 200. Drawings of the individual grass species are also from this publication. Drawings showing the structure of grass plants are from Grass, The Yearbook of Agriculture 1948, U.S. Department of Agriculture. Unless otherwise noted, common names are those listed in the second edition of Standardized Plant Names[1].

More details on the grass species and also on additional exotic perennial and the annual species are found in the manual from which this was abstracted or from manuals of regional flora. In addition, some of the midwestern universities have developed publications describing the use and local distribution of the grasses occurring within a state.

This guide was compiled by the plant scientists at the Midwest Regional Technical Service Center, Soil Conservation Service, Lincoln, Nebraska.

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[1] American Joint Committee on Horticultural Nomenclature. Standardized Plant Names. 1942. J. Horace McFarland Co., Harrisburg, Pa. 2d ed., 675 p.

Key to the Native Perennial Grasses --
Midwest Region East of the Great Plains
(Abstracted from Hitchcock's Manual of the Grasses[2])

CONTENTS

Page

An annotated list of native perennial grasses 1

Taxonomic key to the native perennial grasses 12

- Key to subfamilies 12
- Key to tribes of Festucoideae 12
- Key to tribes of Panicoideae 12
- Key to selected genera of some tribes 12
- Key to selected species of some genera 15
- Key to subgenera 25
- Key to subgenus Dichanthelium *(Panicum* genus) 25
- Key to subgenus Eupanicum *(Panicum* genus) 27
- Key to taxonomic subdivisions of *Poa* genus 29

Illustrations of individual grass species 34

Illustrations of the structure of grass plants 104

Glossary 106

Index to grass species 108

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[2] Hitchcock, A. S. 1950. Manual of the Grasses of the United States. 2d ed. revised by Agnes Chase. U.S. Dept. Agr. Misc. Publ. 200, 1051 p.

Washington, D.C. October 1968

AN ANNOTATED LIST OF NATIVE PERENNIAL GRASSES

Figure No.[3]	Species	Common name[4]	Environment	Growth habit	Distribution
	Agropyron:				
1.	*A. dasystachyum*	thickspike wheatgrass	prairies, sandy shores	sod	North Dakota, South Dakota, Nebraska, Wisconsin, Illinois, Michigan
2.	*A. pseudorepens*	false quackgrass	prairies, savannas	sod	South Dakota, Nebraska, Michigan
3.	*A. smithii*	western wheatgrass (Hitchcock)	prairies, savannas	sod	all Midwest States
4.	*A. spicatum*	bearded bluebunch wheatgrass	forest openings	bunch	Michigan (Upper Peninsula)
5.	*A. subsecundum*	bearded wheatgrass	prairies, savannas, forest openings	bunch	all Midwest States except Kansas
6.	*A. trachycaulum*	slender wheatgrass (Hitchcock)	prairies, savannas, forest openings	bunch	all Midwest States
	Agrostis:				
7.	*A. hiemalis*	winter bentgrass	prairies, savannas	bunch	Kansas, Missouri, Illinois, Iowa, Indiana
8.	*A. perennans*	autumn bentgrass	forest openings, savannas	bunch	all Midwest States except North Dakota South Dakota
9.	*A. scabra*	–	meadows, forest openings	bunch	all Midwest States except Missouri
	Alopecurus:				
10.	*A. aequalis*	shortawn foxtail	shallow water, wet places	bunch	all Midwest States
11.	*A. geniculatus*	water foxtail	shallow water, wet places	bunch	Michigan, Wisconsin
	Ammophila:				
12.	*A. breviligulata*	American beachgrass	lake shore sand dunes	sod	Michigan, Indiana, Illinois, Wisconsin, Minnesota
	Andropogon:				
13.	*A. elliottii*	elliott bluestem	forest openings, savannas	bunch	Indiana, Illinois, Missouri
14.	*A. gerardi*	big bluestem (Hitchcock)	prairies, savannas	sod	all Midwest States
15.	*A. hallii*	sand bluestem	sand prairies	sod	North Dakota, South Dakota, Nebraska, Kansas, Iowa
16.	*A. littoralis*	seacoast bluestem	sandy lake shores	sod	Michigan, Indiana
17.	*A. saccharoides*	silver bluestem	prairies, savannas	bunch	Kansas, Missouri
18.	*A. scoparius*	little bluestem	prairies, savannas	bunch	all Midwest States
19.	*A. ternarius*	–	prairies, savannas	bunch	Kansas, Missouri

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[3] Numbers are those used to identify species.

[4] Dashes indicate that no common name is given in Standardized Plant Names or in Hitchcock's Manual of the Grasses.

Figure No.	Species	Common name	Environment	Growth habit	Distribution
20.	*A. virginicus*	yellowsedge bluestem (broomsedge)	disturbed areas, forests, savannas	bunch	Michigan, Indiana, Illinois, Iowa, Missouri, Kansas
	Aristida:				
21.	*A. lanosa*	woollysheath threeawn	disturbed areas, sand	bunch	Missouri
22.	*A. longiseta*	red threeawn	disturbed areas, prairies	bunch	North Dakota, South Dakota, Nebraska, Kansas, Missouri
23.	*A. purpurascens*	arrowfeather threeawn	disturbed areas, sand	bunch	Michigan, Wisconsin, Indiana, Illinois, Missouri, Kansas
	Arundinaria:				
24.	*A. gigantea*	giant cane	alluvial soils	sod	southern Indiana, Illinois, Missouri
	Bouteloua:				
25.	*B. curtipendula*	sideoats grama	prairies, savannas	sod	all Midwest States
26.	*B. gracilis*	blue grama	prairies, dry sites	bunch	all Midwest States except Michigan, Indiana
27.	*B. hirsuta*	hairy grama	prairies, dry sites	bunch	all Midwest States except Michigan, Indiana
	Brachyelytrum:				
28.	*B. erectum*	bearded shorthusk	forests (tolerates dense shade)	sod	Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, Missouri, Kansas
	Bromus:				
29.	*B. ciliatus*	fringed brome	forest openings, savannas	bunch	Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Nebraska
30.	*B. kalmii*	kalm brome	forests	bunch	Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, South Dakota
31.	*B. latiglumis*	earleaf brome	moist forests	bunch	all Midwest States except Kansas
32.	*B. purgans*	Canada brome	moist forests	bunch	all Midwest States
	Buchloe:				
33.	*B. dactyloides*	buffalograss	prairies	sodlike (stolons)	North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa
	Calamagrostis:				
34.	*C. canadensis*	bluejoint reedgrass	wet meadows, marshes, moist forest areas	sod	all Midwest States
35.	*C. inexpansa*	northern reedgrass	wet prairies, moist forest areas	sod	all Midwest States except Kansas
36.	*C. lacustris*	—	marshes, sandy shores	sod	Michigan, Minnesota

Figure No.	Species	Common name	Environment	Growth habit	Distribution
37.	*C. montanensis*	plains reedgrass	prairies, plains	sod	North Dakota, South Dakota, Minnesota
38.	*C. neglecta*	slimstem reedgrass	marshes, sandy shores	sod	Michigan, Wisconsin, Minnesota, North Dakota,
39.	*C. pickeringii*	pickering reedgrass	bogs, wet meadows	sod	Michigan (Isle Royale)
	Calamovilfa:				
40.	*C. longifolia*	prairie sandreed	sandy prairies, savannas	sod	all Midwest States except Kansas
	Catabrosa:				
41.	*C. aquatica*	brookgrass	shallow water. wet soils	bunch	North Dakota, South Dakota, Nebraska, Wisconsin
	Cinna:				
42.	*C. arundinacea*	stout woodreed	moist forests	bunch	all Midwest States except North Dakota
43.	*C. latifolia*	drooping woodreed	moist forests	bunch	Michigan, Illinois, Wisconsin, Minnesota, North Dakota, South Dakota
	Danthonia:				
44.	*D. intermedia*	timber danthonia	meadows, bogs (Michigan)	bunch	Michigan (Upper Peninsula), South Dakota
45.	*D. spicata*	poverty danthonia	dry, open forests, savannas	bunch	Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, Missouri, South Dakota
	Deschampsia:				
46.	*D. caespitosa*	tufted hair-grass	bogs, wet meadows	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, North Dakota
47.	*D. flexuosa*	wavy hair-grass	forest openings	bunch	Michigan, Wisconsin, Minnesota
	Diarrhena:				
48.	*D. americana*	American beakgrain	moist forests	sod	all Midwest States except North Dakota, Minnesota
	Distichlis:				
49.	*D. stricta*	inland saltgrass	moist alkaline soil	sod	North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri
	Elymus:				
50.	*E. canadensis*	Canada wildrye	prairies, savannas	bunch	all Midwest States
51.	*E. glaucus*	blue wildrye	forests	bunch	South Dakota, Iowa, Michigan, Missouri
52.	*E. interruptus*	Texas wildrye	moist prairies, open forests	bunch	North Dakota, South Dakota, Minnesota, Wisconsin, Michigan
53.	*E. macounii*	macoun wildrye	meadows, forest openings	bunch	North Dakota, South Dakota, Nebraska, Kansas, Iowa, Minnesota

Figure No.	Species	Common name	Environment	Growth habit	Distribution
54.	*E. mollis*	common dune wildrye	lake shore sand dunes	sod	Michigan, Wisconsin, Illinois
55.	*E. riparius*	riverbank wildrye	riverbanks, alluvial areas	bunch	Nebraska, Kansas, Iowa, Missouri, Michigan, Wisconsin, Indiana
56.	*E. villosus*	hairy wildrye	forests, savannas	bunch	all Midwest States
57.	*E. virginicus*	Virginia wildrye	alluvial soils, lowland forests	bunch	all Midwest States
	Eragrostis:				
58.	*E. intermedia*	plains lovegrass	prairies	bunch	Kansas, Missouri
59.	*E. pilifera*	sandhill lovegrass	sandy prairies	bunch	Nebraska, Kansas, Illinois
60.	*E. spectabilis*	purple lovegrass	prairies, savannas	bunch	all Midwest States except North Dakota, South Dakota
61.	*E. trichodes*	sand lovegrass	sandy prairies	bunch	Kansas, Nebraska, Iowa, Missouri, Illinois
	Erianthus:				
62.	*E. alopecuroides*	silver plumegrass	wet alluvial soils, marshes	bunch	southern Missouri, Illinois, Indiana
63.	*E. brevibarbis*	brown plumegrass	damp soils	bunch	southern Illinois
64.	*E. strictus*	narrow plumegrass	wet alluvial soils	bunch	southern Missouri
	Festuca:				
65.	*F. obtusa*	nodding fescue	moist forests	bunch	all Midwest States
66.	*F. paradoxa*	cluster fescue	moist forests, prairies	bunch	Indiana, Wisconsin, Illinois, Iowa, Missouri, Kansas
	Glyceria:				
67.	*G. acutiflora*	creeping mannagrass	wetlands, shallow water	bunch	Missouri, Indiana, Michigan
68.	*G. borealis*	northern mannagrass	wetlands, shallow water	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Iowa, North Dakota, South Dakota
69.	*G. canadensis*	rattlesnake mannagrass	bogs, swamps	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois
70.	*G. fernaldii*	fernald mannagrass	swamps, shallow water	bunch	Michigan, Wisconsin, Minnesota
71.	*G. grandis*	American mannagrass	marshes, swamps	bunch	all Midwest States except Kansas, Missouri
72.	*G. pallida*	pale mannagrass	cold, shallow water	bunch	Michigan, Wisconsin, Indiana, Missouri
73.	*G. septentrionalis*	eastern mannagrass	wet soils, shallow water	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Iowa, Missouri
74.	*G. striata*	fowl mannagrass	wetlands, marshes	bunch	all Midwest States

Figure No.	Species	Common name	Environment	Growth habit	Distribution
	Gymnopogon:				
75.	*G. ambiguus*	bearded skeletongrass	forests, savannas	sod	Indiana, Illinois, Kansas
	Helictotrichon:				
76.	*H. hookeri*	spike oat (Hitchcock)	prairies	bunch	North Dakota, Minnesota
	Hierochloe:				
77.	*H. odorata*	sweetgrass	wetlands, bogs	sod	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Iowa, North Dakota, South Dakota
	Hordeum:				
78.	*H. jubatum*	foxtail barley	prairies, meadows	bunch	all Midwest States
79.	*H. montanense*	Montana barley	prairies	bunch	South Dakota, Iowa, Illinois
	Hystrix:				
80.	*H. patula*	bottlebrushgrass	forests, savannas	bunch	all Midwest States
	Koeleria:				
81.	*K. cristata*	prairie junegrass	prairies, savannas	bunch	all Midwest States except Michigan
	Leersia:				
82.	*L. lenticularis*	catchflygrass	wetlands, swamps	sod	Minnesota, Wisconsin, Illinois, Indiana, Iowa, Missouri
83.	*L. oryzoides*	rice cutgrass	marshes, swamps	sod	all Midwest States
84.	*L. virginica*	whitegrass	alluvial soils, swamps	sod	all Midwest States except North Dakota
	Leptoloma:				
85.	*L. cognatum*	fall witchgrass	sandy prairies, open forests	bunch	all Midwest States except South Dakota, North Dakota
	Melica:				
86.	*M. mutica*	twoflower melic	moist forests	bunch	Iowa, Illinois, Indiana
87.	*M. nitens*	threeflower melic	forests	bunch	Kansas, Iowa, Missouri, Wisconsin, Illinois, Indiana
88.	*M. smithii*	smith melic	moist forests	bunch	Michigan (Upper Peninsula)
	Milium:				
89.	*M. effusum*	American milletgrass	moist forests	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois
	Muhlenbergia:				
90.	*M. asperifolia*	alkali muhly	damp, often alkali soils	sod	all Midwest States
91.	*M. brachyphylla*	nodding muhly	wooded alluvial soils	sod	Wisconsin, Indiana, Illinois, Missouri, Iowa, Nebraska, Kansas

Figure No.	Species	Common name	Environment	Growth habit	Distribution
92.	*M. capillaris*	hairawn muhly	stony or sandy forests	bunch	Indiana, Illinois, Missouri, Kansas
93.	*M. curtisetosa*	Illinois nimblewill	damp, shady wooded areas	bunch	Illinois, Missouri
94.	*M. cuspidata*	stonyhills muhly	prairies	bunch	all Midwest States
95.	*M. frondosa*	–	lowland open forests	sod	all Midwest States
96.	*M. glabriflora*	inland muhly	lowland forests	sod	Indiana, Illinois, Missouri
97.	*M. glomerata*	–	sphagnum bogs, swamps	sod	Michigan, Wisconsin, Illinois, Nebraska
98.	*M. mexicana*	wirestem muhly	savannas, open forests	bunch	all Midwest States
99.	*M. racemosa*	green muhly	meadows, moist woods	sod	all Midwest States
100.	*M. richardsonis*	mat muhly	damp to wet alkaline areas	sod	North Dakota, South Dakota, Nebraska, Minnesota, Michigan
101.	*M. schreberi*	nimblewill	damp, shady wooded areas	bunch	Indiana, Michigan, Wisconsin, Illinois, Iowa, Missouri, Kansas, Nebraska
102.	*M. sobolifera*	rock muhly	dry, wooded slopes	sod	Indiana, Illinois, Wisconsin, Missouri, Iowa, Nebraska, Kansas
103.	*M. sylvatica*	forest muhly	moist forests	sod	all Midwest States except North Dakota
104.	*M. tenuiflora*	slimflower muhly	rocky forested areas	sod	Michigan, Wisconsin, Indiana, Illinois, Iowa, Missouri
105.	*M. uniflora*	bog muhly	bogs, wet meadows	bunch	Michigan, Wisconsin
	Oryzopsis:				
106.	*O. asperifolia*	roughleaf ricegrass	forests, savannas	bunch	Michigan, Indiana, Wisconsin, Minnesota, North Dakota, South Dakota
107.	*O. canadensis*	Canada ricegrass	forests, savannas	bunch	Michigan, Wisconsin, Minnesota
108.	*O. pungens*	shorthorn ricegrass	forests, savannas	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, South Dakota
109.	*O. racemosa*	blackseed ricegrass	forests, savannas	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Iowa, South Dakota
	Panicum:				
110.	*P. agrostoides*	redtop panicum	wet meadows	bunch	Michigan, Indiana, Illinois, Missouri, Kansas
111.	*P. albemarlense*	–	sandy forests, dry uplands	bunch	Michigan, Wisconsin, Minnesota, Illinois, Indiana
112.	*P. anceps*	beaked panicum	moist forests	sod	Indiana, Illinois, Missouri, Kansas

Figure No.	Species	Common name	Environment	Growth habit	Distribution
113.	*P. annulum*	–	dry forests	bunch	Michigan, Missouri
114.	*P. ashei*	ashe panicum	dry forests	bunch	Michigan, Indiana, Missouri
115.	*P. auburne*	–	forests, sandy areas	bunch	Indiana, Iowa
116.	*P. barbulatum*	–	forests, rocky uplands	bunch	Michigan, Indiana, Illinois, Missouri
117.	*P. bicknellii*	bicknell panicum	forests, stony land	bunch	Indiana, Michigan, Missouri
118.	*P. boreale*	–	moist forests and openings	bunch	Minnesota, Wisconsin, Michigan, Indiana
119.	*P. boscii*	–	forests	bunch	Wisconsin, Illinois, Indiana, Missouri
120.	*P. calliphyllum*	–	forests	bunch	Michigan, Missouri
121.	*P. clandestinum*	–	moist sandy areas	bunch	Michigan, Indiana, Illinois, Iowa, Missouri
122.	*P. columbianum*	–	forests, sandy areas	bunch	Indiana, Michigan
123.	*P. commutatum*	–	forests	bunch	Michigan, Indiana, Illinois, Missouri
124.	*P. deamii*	deam panicum	sand dunes, sandy forests	bunch	Indiana, Iowa
125.	*P. depauperatum*	–	forest openings	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Missouri, Kansas
126.	*P. dichotomum*	–	forests	bunch	Michigan, Indiana, Illinois, Missouri
127.	*P. helleri*	heller panicum	prairies, savannas	bunch	Missouri
128.	*P. hians*	gaping panicum	moist streambanks	bunch	Missouri
129.	*P. huachucae*	huachuca panicum	prairies, savannas	bunch	all Midwest States
130.	*P. implicatum*	–	meadows, bogs	bunch	Michigan, Wisconsin, Minnesota, Indiana, Iowa, Missouri
131.	*P. latifolium*	–	sandy, rocky forests	bunch	Michigan, Wisconsin, Minnesota, Illinois, Indiana, Iowa, Missouri, Kansas
132.	*P. leibergii*	leiberg panicum	prairies, savannas	bunch	all Midwest States
133.	*P. lindheimeri*	lindheimer panicum	dry forests, savannas	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Missouri, Kansas
134.	*P. linearifolium*	slimleaf panicum	upland forests	bunch	Michigan, Indiana, Wisconsin, Illinois, Iowa, Kansas, Missouri
135.	*P. longifolium*	longleaf panicum	moist, sandy areas	bunch	Indiana
136.	*P. lucidum*	–	bogs, moist forests	bunch	Michigan, Indiana
137.	*P. malacophyllum*	softleaf panicum	sandy forests	bunch	Kansas, Missouri
138.	*P. mattamuskeetense*	–	low, moist areas	bunch	Indiana
139.	*P. meridionale*	–	upland forests	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois

Figure No.	Species	Common name	Environment	Growth habit	Distribution
140.	*P. microcarpon*	–	wet forests, swamps	bunch	Michigan, Indiana, Illinois, Missouri
141.	*P. nitidum*	–	marshes, wetlands	bunch	Missouri
142.	*P. obtusum*	vine-mesquite	prairies	sod (stolons)	Kansas, Missouri
143.	*P. oligosanthes*	–	moist forests	bunch	Michigan, Indiana, Illinois, Iowa, Missouri
144.	*P. ovale*	–	upland forests	bunch	Indiana, Illinois
145.	*P. perlongum*	--	prairies, savannas	bunch	all Midwest States
146.	*P. polyanthes*	–	moist forests	bunch	Indiana, Illinois, Missouri
147.	*P. praecocius*	–	prairies, savannas	bunch	all Midwest States
148.	*P. pseudopubescens*	–	forest openings	bunch	Michigan, Wisconsin, Indiana, Illinois, Iowa, Kansas
149.	*P. ravenelii*	–	sandy, rocky forests	bunch	Missouri
150.	*P. scoparioides*	–	dry upland forests	bunch	Michigan, Minnesota, Indiana, Iowa, Kansas
151.	*P. scoparium*	velvet panicum	wetlands, moist soils	bunch	Missouri
152.	*P. scribnerianum*	scribner panicum	prairies, savannas	bunch	all Midwest States
153.	*P. sphaerocarpon*	roundseed panicum	sandy forests, savannas	bunch	Michigan, Indiana, Illinois, Missouri, Kansas
154.	*P. spretum*	–	wet sandy soils	bunch	Michigan, Indiana
155.	*P. stipitatum*	purple panicum	moist forests	bunch	Indiana, Missouri
156.	*P. subvillosum*	–	dry upland forests	bunch	Michigan, Minnesota, Indiana, Iowa, Missouri
157.	*P. tennesseense*	Tennessee panicum	moist forest openings	bunch	all Midwest States except South Dakota
158.	*P. tsugetorum*	hemlock panicum	sandy forests	bunch	Michigan, Wisconsin, Indiana, Illinois
159.	*P. villosissimum*	–	dry forests, savannas	bunch	Michigan, Indiana, Illinois, Missouri, Kansas
160.	*P. virgatum*	switchgrass	prairies, savannas	sod	all Midwest States
161.	*P. werneri*	werner panicum	dry forests	bunch	Michigan, Wisconsin, Minnesota, Indiana, Missouri
162.	*P. wilcoxianum*	wilcox panicum	prairies, savannas	bunch	Minnesota, Wisconsin, Illinois, Iowa, Kansas, Nebraska, South Dakota, North Dakota
163.	*P. xanthophysum*	–	sandy forests	bunch	Michigan, Minnesota, Wisconsin
164.	*P. yadkinense*	–	moist forests	bunch	Michigan, Indiana, Illinois
165.	*Paspalum:*				
165.	*P. ciliatifolium*	fringeleaf paspalum	forest openings, savannas	bunch	Minnesota, Illinois, Missouri, Kansas

Figure No.	Species	Common name	Environment	Growth habit	Distribution
166.	*P. circulare*	roundseed paspalum	forest openings, savannas	bunch	Indiana, Illinois, Missouri, Kansas
167.	*P. dissectum*	mudbank paspalum	wetlands	bunch (creeping)	Illinois, Missouri
168.	*P. floridanum*	Florida paspalum	moist prairies, savannas	sod	Illinois, Missouri, Kansas
169.	*P. pubescens*	hurrahgrass	sandy forest openings	bunch	Michigan, Indiana, Illinois, Missouri, Kansas
170.	*P. pubiflorum (var. glabrum)*	hairyseed paspalum	moist lowlands	bunch	Indiana, Illinois
171.	*P. stramineum*	sand paspalum	sand prairies, savannas	bunch	Wisconsin, Minnesota, Indiana, Illinois, Missouri, Nebraska, Kansas
	Phalaris:				
172.	*P. arundinacea*	reed canarygrass	marshes, wetlands	sod	all Midwest States
	Phleum:				
173.	*P. alpinum*	alpine timothy	bogs, meadows	bunch	Michigan (Upper Peninsula)
	Phragmites:				
174.	*P. communis*	common reed	marshes, swamps	sod	all Midwest States
	Poa:				
175.	*P. alsodes*	grove bluegrass	moist forests	bunch	Michigan, Minnesota, Wisconsin, Indiana
176.	*P. arida*	plains bluegrass	prairies	sod	Iowa, Kansas, Nebraska, South Dakota, North Dakota
177.	*P. autumnalis*	autumn bluegrass	moist forests	bunch	Michigan, Indiana, Illinois
178.	*P. canbyi*	Canby bluegrass	prairies, savannas	bunch	Michigan, Minnesota, North Dakota, South Dakota, Nebraska
179.	*P. chaixii*	–	moist forests	bunch	Minnesota (northeast)
180.	*P. glauca*	greenland bluegrass	moist forests	bunch	Wisconsin, Minnesota
181.	*P. glaucifolia*	–	moist open woods	sod	Minnesota, North Dakota, South Dakota, Nebraska
182.	*P. interior*	inland bluegrass	prairies, savannas	bunch	Michigan, Wisconsin, Minnesota, North Dakota, South Dakota
183.	*P. languida*	torrey bluegrass	upland forests, savannas	bunch	Michigan, Wisconsin, Minnesota, Indiana, Illinois, Iowa
184.	*P. paludigena*	–	bogs	bunch	Michigan, Wisconsin, Indiana, Illinois
185.	*P. palustris*	fowl bluegrass	moist prairies, forests	bunch	all Midwest States except Kansas
186.	*P. saltuensis*	–	forests	bunch	Michigan, Wisconsin, Minnesota

Figure No.	Species	Common name	Environment	Growth habit	Distribution
187.	*P. sylvestris*	woodland bluegrass	moist forests	bunch	Michigan, Wisconsin, Indiana, Illinois, Iowa, Missouri, Nebraska
188.	*P. wolfii*	wolfs bluegrass	moist forests	bunch	Wisconsin, Indiana, Minnesota, Iowa, Missouri, Nebraska
	Puccinellia:				
189.	*P. airoides*	nuttall alkaligrass (Hitchcock)	moist alkaline areas	bunch	Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Kansas
	Schizachne:				
190.	*S. purpurascens*	false melic	upland forests, savannas	bunch	all Midwest States except Kansas, Missouri
	Scolochloa:				
191.	*S. festucacea*	rivergrass	marshes, wetlands	sod	Minnesota, Iowa, North Dakota, South Dakota, Nebraska
	Setaria:				
192.	*S. geniculata*	knotroot bristlegrass	moist areas, slightly alkaline	sod	Illinois, Missouri, Kansas
	Sitanion:				
193.	*S. hystrix*	bottlebrush squirreltail	prairies, savannas	bunch	Missouri, Kansas, Nebraska
	Sorghastrum:				
194.	*S. nutans*	yellow indiangrass	prairies, savannas	sod	all Midwest States
	Spartina:				
195.	*S. patens*	marshhay cordgrass	salt marshes	sod	Michigan
196.	*S. pectinata*	prairie cordgrass	moist prairies, wetlands	sod	all Midwest States
	Sphenopholis:				
197.	*S. intermedia*	slender wedgescale	forests, moist areas	bunch	all Midwest States except North Dakota
198.	*S. nitida*	shiny wedgescale	savannas, open forests	bunch	Michigan, Indiana, Illinois, Missouri, North Dakota
199.	*S. obtusata*	prairie wedgescale	prairies, savannas	bunch	all Midwest States
	Sporobolus:				
200.	*S. airoides*	alkali sacaton	moist alkaline soils	bunch	Missouri, Kansas, Nebraska, South Dakota
201.	*S. asper*	tall dropseed	prairies, savannas	bunch	all Midwest States
202.	*S. clandestinus*	hidden dropseed	sandy prairies, savannas	bunch	Wisconsin, Indiana, Illinois, Missouri, Kansas
203.	*S. cryptandrus*	sand dropseed	sandy prairies, savannas	bunch	all Midwest States

Figure No.	Species	Common name	Environment	Growth habit	Distribution
204.	*S. heterolepis*	prairie dropseed	prairies, savannas	bunch	all Midwest States
	Stipa:				
205.	*S. avenacea*	blackseed needlegrass	upland forests, savannas	bunch	Michigan, Indiana
206.	*S. comata*	needle-and-thread	prairies, savannas	bunch	all Midwest States except Illinois, Missouri
207.	*S. spartea*	porcupinegrass	prairies, savannas	bunch	all Midwest States
208.	*S. viridula*	green needlegrass	prairies	bunch	Minnesota, Illinois, Wisconsin, North Dakota, Iowa, Kansas, Nebraska, South Dakota
	Tridens:				
209.	*T. chapmani*		upland forests, savannas	bunch	Missouri (south)
210.	*T. elongatus*	rough tridens (Hitchcock)	prairies	bunch	Missouri, Kansas
211.	*T. flavus*	purpletop	forest margins	bunch	Michigan, Indiana, Illinois, Missouri, Iowa, Kansas, Nebraska
212.	*T. strictus*	Longspike triodia	moist lowlands, moist forests	bunch	Illinois, Missouri, Kansas
	Tripsacum:				
213.	*T. dactyloides*	eastern gamagrass	moist lowlands	sod	Michigan, Illinois, Iowa, Missouri, Nebraska, Kansas
	Trisetum:				
214.	*T. melicoides*	melic trisetum	gravelly shorelines	bunch	Michigan, Wisconsin
215.	*T. spicatum*	spike trisetum	forests	bunch	Michigan (Upper Peninsula)
	Uniola:				
216.	*U. latifolia*	broadleaf uniola	forests	sod	Indiana, Illinois, Missouri, Kansas

TAXONOMIC KEY TO THE NATIVE PERENNIAL GRASSES

Key to subfamilies:

Spikelets 1- to many-flowered, articulation usually above the glumes, spikelets more or less laterally compressed . . . . FESTUCOIDEAE
Spikelets with 1 perfect terminal floret and a rudimentary floret below, 1 or rarely both glumes wanting, articulation below spikelets, spikelets or fruit more or less dorsally compressed . . . . PANICOIDEAE

Key to tribes of Festucoideae:

1a. Plants woody, culms perennial . . . . BAMBUSEAE
1b. Plants herbaceous, culms annual.
2a. Spikelets with 2 (rarely 1) rudimentary lemmas unlike and below the fertile lemma . . . . PHALARIDEAE
2b. Spikelets without rudimentary lemmas below the perfect floret.
3a. Spikelets unisexual, falling entire, 1-flowered, terete or nearly so . . . . ZIZANIEAE
3b. Spikelets perfect, usually articulate above the glumes.
4a. Spikelets articulate below glumes, 1-flowered, flat; lemma and palea keeled; glumes small or wanting . . . . ORYZEAE
4b. Spikelets articulate above the glumes, at least one glume well developed.
5a. Spikelets 1-flowered in groups of 2 to 5 (single in Zoysia), the groups racemose along a main axis, falling entire; lemma and palea thinner than the glumes . . . . ZOYSIEAE
5b. Spikelets not as above.
6a. Spikelets sessile on a usually continuous rachis.
Spikelets on opposite sides of the rachis, spike terminal, solitary . . . HORDEAE
Spikelets on one side of the rachis, spikes usually more than 1, digitate or racemose . . . . CHLORIDEAE
6b. Spikelets pedicellate in open or contracted, sometimes spikelike, panicles, rarely racemes.
Spikelets 1-flowered (except some 2-flowered in a few species of *Muhlenbergia)* . . . . AGROSTIDEAE
Spikelets 2- to many-flowered.
Glumes as long as the lowest floret; lemmas awned from the back . AVENEAE
Glumes shorter than the first floret; lemmas awnless or awned from the tip or from a bifid apex . . . . FESTUCEAE

Key to tribes of Panicoideae:

1a. Glumes membranaceous, sterile lemma like the glumes in texture.
2a. Fertile lemma and palea thinner than the glumes; sterile lemma awned from notched summit . . . . MELINIDEAE
2b. Fertile lemma and palea indurate or at least firmer than the glumes . . . . PANICEAE
1b. Glumes indurate; fertile lemma and palea hyaline or membranaceous; sterile lemma texture like fertile lemma.
3a. Spikelets unisexual, pistillate below, staminate above, in the same or separate inflorescences . . . . TRIPSACEAE
3b. Spikelets in pairs, one sessile and perfect, the other pedicellate and usually staminate or neuter; lemmas hyaline . . . . ANDROPOGONEAE

Key to selected genera of some tribes:

FESTUCEAE TRIBE

1a. Tall stout reeds; large plumelike panicles, rachilla hairy; lemmas naked; rhizomatous *Phragmites*
1b. Low or rather tall grasses.
2a. Plants dioecious; spikelets in narrow simple exserted panicles; rhizomatous . . . *Distichlis*
2b. Plants not dioecious.

3a. Lemmas 3-nerved, nerves prominent, often hairy.
4a. Lemmas pubescent on the nerves or callus, midnerve usually exserted as an awn or mucro.
Nerves glabrous; callus densely hairy; lemmas firm; panicle large, diffuse . *Redfieldia*
Nerves hairy, at least below . . . . *Tridens*
4b. Lemmas not pubescent on nerves or callus, awnless.
Lemmas chartaceous, grain large, beaked . . . . *Diarrhena*
Lemmas membranaceous, if firm grain not large or beaked.
Lemmas truncate; spikelets 2-flowered . . . . *Catabrosa*
Lemmas acute or acuminate: spikelets 3- to many-flowered; rachilla continuous; paleas persistent . . . . *Eragrostis*
3b. Lemmas 5- to many-nerved, nerves sometimes obscure.
5a. Spikelets with 1 to 4 empty lemmas below the fertile florets, nerves obscure; lemmas firm . . . . *Uniola*
5b. Spikelets with no empty lemmas below the fertile florets; nerves usually prominent; lemmas membranaceous.
6a. Callus of florets bearded.
Lemmas erose at summit, awnless . . . . *Scolochloa*
Lemmas bifid at summit, awned . . . . *Schizachne*
6b. Callus not bearded.
7a. Lemmas keeled on the back.
8a. Lemmas awned from a minutely bifid apex; spikelets large . . . . *Bromus*
8b. Lemmas awnless; spikelets small . . . . *Poa*
7b. Lemmas rounded on the back (slightly keeled toward the summit in *Festuca* and *Bromus)*
9a. Glumes papery; lemmas firm, strongly nerved, scarious-margined; spikelets tawny or purplish . . . . *Melica*
9b. Glumes not papery.
10a. Nerves of lemma parallel, not converging at summit or but slightly so.
Nerves prominent. . . . . *Glyceria*
Nerves faint . . . . *Puccinellia*
10b. Nerves of lemma converging to the summit; lemmas narrowed at apex.
Lemmas awned or awn-tipped from a minutely bidfid apex . . . . *Bromus*
Lemmas entire, pointed, awnless or awned from tip.
Spikelets awned; lemmas pointed . . . . *Festuca*
Spikelets awnless . . . . *Poa*

HORDEAE TRIBE

a. Spikelets solitary at each node of the rachis (rarely 2 in species of *Agropyron,* but never throughout). . . . . *Agropyron*
b. Spikelets more than 1 at each node of the rachis (solitary in part of the spike in some species of *Elymus).*
2a. Spikelets 3 at each node of the rachis, 1-flowered, lateral pair pediceled, usually reduced to awns . . . . *Hordeum*
2b. Spikelets 2 or more (sometimes solitary in *Elymus)* at each node of the rachis, alike, 2- to 6-flowered.
3a. Glumes wanting or reduced to 2 short bristles; spikes very loose . . . . *Hystrix*
3b. Glumes usually equaling the florets.
Rachis continuous; glumes broad or narrow, entire . . . . *Elymus*
Rachis disarticulating at maturity; glumes extending into long awns . . . . . *Sitanion*

AVENEAE TRIBE

a. Articulation below the glumes, spikelets falling entire.
2a. Lemmas, at least the upper, with a conspicuous bent awn, glumes nearly alike . . *Trisetum*
2b. Lemmas awnless or the upper with a short awn, second glume much wider than the first . . . . *Sphenopholis*

1b. Articulation above the glumes, glumes similar in shape.
3a. Lemmas bifid at apex; awns conspicuous, flat, bent . . . . *Danthonia*
3b. Lemmas toothed, but not bifid and awned or mucronate between the lobes.
4a. Spikelets 3- to several-flowered, 1.0 to 1.5 cm. long . . . . *Helictotrichon*
4b. Spikelets 2-flowered, mostly less than 1 cm. long.
5a. Lemmas keeled; the awn when present from above the middle.
Rachilla joints very short, glabrous or minutely pubescent; lemmas awnless or with a straight awn from a toothed apex . . . . *Koeleria*
Rachilla joints slender, villous; lemmas with a dorsal bent awn . . . . . *Trisetum*
5b. Lemmas convex, awned from below the middle, awn slender not jointed . . . . *Deschampsia*

AGROSTIDEAE TRIBE

1a. Articulation below glumes, spikelets falling entire.
2a. Rachilla not prolonged behind the palea; panicle dense . . . . *Alopecurus*
2b. Rachilla prolonged behind the palea; panicle open, drooping; lemma with a minute straight awn just below the entire apex (rarely awnless). . . . . *Cinna*
1b. Articulation above the glumes.
3a. Fruit dorsally compressed, indurate, smooth, and shining, awnless. . . . . *Milium*
3b. Fruit laterally compressed or terete, awned or awnless.
4a. Fruit indurate, terete, awned, the nerves obscure; callus well developed, oblique, bearded.
Awn trifid, lateral divisions sometimes short . . . . *Aristida*
Awn simple.
Awn persistent, twisted, bent, several to many times longer than the fruit; edges of lemma overlapping; callus sharp-pointed . . . *Stipa*
Awn deciduous, not twisted, sometimes bent, rarely more than 3 or 4 times as long as the pump fruit. . . . . *Oryzopsis*
4b. Fruit thin or firm, not indurate; callus not well developed.
5a. Glumes longer than the lemma.
6a. Glumes compressed-carinate, stiff-ciliate on keel; panicle dense and cylindric or ellipsoid . . . . *Phleum*
6b. Glumes not compressed-carinate, not ciliate.
Floret bearing a tuft of hairs at base from the short callus; palea well developed; rachilla prolonged behind the palea as a hairy bristle . . . . *Calamagrostis*
Floret without hairs at base or with short hairs; palea usually small or obsolete . . . . *Agrostis*
5b. Glumes not longer than lemma, usually shorter.
7a. Lemma awned from tip or mucronate, 3- to 5-nerved.
Rachilla prolonged behind the palea; floret stipitate; glumes minute or obsolete . . . . *Brachyelytrum*
Rachilla not prolonged; floret not stipitate . . . . *Muhlenbergia*
7b. Lemma awnless or awned from the back.
8a. Floret bearing a tuft of hairs at the base from the short callus; lemma and palea chartaceous, awnless.
Panicle spikelike; rachilla prolonged. . . . . *Ammophila*
Panicle open; rachilla not prolonged . . . . *Calamovilfa*
8b. Floret without hairs at base.
Caryopsis at maturity falling from the lemma and palea, seed loose in pericarp . . . . *Sporobolus*
Caryopsis remaining permanently enclosed; panicle elongate . . . . *Muhlenbergia*

CHLORIDEAE TRIBE

1a. Plants monoecious or dioecious. . . . . *Buchloe*
1b. Plants with perfect flowers.
Spikelets without modified florets above perfect floret . . . . *Spartina*
Spikelets with 1 or more modified florets above the perfect one.
Spikelets distant, appressed; spikes racemose, slender, elongate . . . . *Gymnopogon*
Spikelets crowded, 2 to many in each spike . . . . *Bouteloua*

PHALARIDEAE TRIBE

Lower florets staminate below 1 terminal perfect floret; spikelets brown, shining . . . . . *Hierochloe*
Lower florets neuter below 1 terminal perfect floret, reduced to small awnless scalelike lemmas; spikelets green or yellowish . . . . *Phalaris*

PANICEAE TRIBE

1a. Spikelets subtended by 1 to many distinct or more or less connate bristles, forming an involucre . . . . *Setaria*
1b. Spikelets not subtended by bristles.
  2a. Fruits cartilaginous-indurate, flexible; lemma with white hyaline margins, fruiting lemma convex; panicles diffuse . . . . *Leptoloma*
  2b. Fruit chartaceous indurate, rigid.
    First glume typically wanting; spikelets plano-convex; subsessile in spikelike racemes . . . . *Paspalum*
    First glume present; spikelets usually in panicles . . . . *Panicum*

ANDROPOGONEAE TRIBE

Racemes of several to many joints, solitary, digitate, or aggregate in panicles; spikelets in pairs; slender awns . . . . *Andropogon*
Racemes reduced to one or few joints; terminal rather dense panicle; spikelets in pairs; one sessile and perfect, the other only a hairy pedicel . . . . *Sorghastrum*

Key to selected species of some genera:

Agropyron:

Spikelets several-flowered, solitary (rarely in pairs for a portion of the spike), sessile, flatwise at each joint of the rachis; glumes equal, firm, usually shorter than the first lemma, acute or awned; lemmas firm, 5- to 7-nerved, acute or awned from apex; palea about as long as lemma.

1a. Creeping rhizomes present.
  2a. Glumes rigid, gradually tapering into a short awn . . . . *A. smithii*
  2b. Glumes not rigid, acute or abruptly awn-pointed.
    Lemmas glabrous; blades lax, flat.
      Glumes shorter than spikelets; rachilla glabrous . . . . *A. repens* (exotic)
      Glumes nearly as long as spikelets; rachilla pubescent . . . . *A. pseudorepens*
    Lemmas pubescent . . . . *A. dasystachyum*
1b. Plants without creeping rhizomes.
  3a. Spikelets awnless or awn-tipped only. . . . . *A. trachycaulum*
  3b. Spikelets awned.
    Awn straight . . . . *A. subsecundum*
    Awn divergent when dry . . . . *A. spicatum*

Agropyron intermedium (exotic) Blades short, involute, acutish; glumes about 5-nerved; lemmas awnless.
Agropyron trichophorum (exotic) Blades flat; spikelets pubescent, awnless; glumes several-nerved, acutish.

Agrostis:

Spikelets 1-flowered, disarticulating above the glumes; glumes equal or nearly so, acute, acuminate, or sometimes awn-pointed, usually scabrous on the keel and sometimes on the back; lemma obtuse, usually shorter and thinner than the glumes, mostly 3-nerved, awnless or dorsally awned, often hairy on callus; palea usually shorter than the lemma, 2-nerved in some species, usually small and nerveless or obsolete.

1a. Palea evident, 2-nerved, at least half as long as the lemma; blades flat, 5 to 10 mm. wide; panicle pyramidal-oblong up to 20 cm. long; strong creeping rhizomes . . . . *A. alba* (exotic)

1b. Palea obsolete, or a minute nerveless scale; plants without rhizomes; panicle open sometimes diffuse, branches very slender and scabrous.

2a. Panicle very diffuse, the capillary branches branching toward the end.

Spikelets 1.5 to 1.7 mm. long, very densely clustered at the ends of the branchlets. . . . . *A. hiemalis*

Spikelets 2.0 to 2.7 mm. long, loosely arranged at the ends of the branchlets . . . . *A. scabra*

2b. Panicle open but not diffuse, the branches branching at or below the middle; spikelets mostly 2.2 to 2.7 mm. long not aggregate or but slightly so at the ends of the panicle branches . . . . *A. perennans*

Alopecurus:

Spikelets 1-flowered, disarticulating below the glumes, strongly compressed laterally; glumes equal, usually united at base, ciliate on the keel; lemma about as long as the glumes, 5-nerved, obtuse, margins united at base, bearing from below the middle a slender dorsal awn, this included or exserted 2 to 3 times the length of the spikelet; palea wanting.

1a. Spikelets 5 to 6 mm. long; panicle cylindric, dense; glumes conspicuously ciliate on keel; awn exserted 2 to 5 mm.. . . . . *A. pratensis* (exotic)

1b. Spikelets 2 to 4 mm. long; panicle linear or linear-oblong.

Awn scarcely exceeding the glumes . . . . *A. aequalis*

Awn exserted 2 to 3 mm. . . . . *A. geniculatus*

Alopecurus arundinaceus (exotic) Tall rhizomatous perennial; blades 3 to 10 mm. wide; panicle 4 to 10 cm. long, 7 to 10 mm. thick, often purplish; spikelets 4 to 5 mm. long; glumes sparsely pubescent, long-ciliate on the keel; lemma about equaling the glumes, the awn included or exserted 1 to 3 mm.

Ammophila[5]

Spikelets 1-flowered, compressed; rachilla disarticulating above the glumes, produced beyond the palea as a short bristle, hairy above; glumes about equal, chartaceous; lemma similar to and a little shorter than the glumes; callus bearded; palea nearly as long as the lemma.

Culms tufted, 70 to 100 cm. tall with deep strong creeping rhizomes, base of the culms clothed with numerous broad overlapping sheaths; ligule firm, 1 to 3 mm. long; blades elongate, firm, soon involute, curved forward past the culm; panicle pale, 15 to 30 cm. long, nearly cylindric; spikelets 11 to 14 mm. long . . . . *A. breviligulata*

Andropogon:

Spikelets in pairs at each node of an articulate rachis, one sessile and perfect, the other pedicellate and either staminate, neuter, or reduced to the pedicel; the rachis and pedicels of the sterile spikelets often villous, sometimes conspicuously so; glumes of fertile spikelet coriaceous, narrow, the first rounded, flat, or concave on the back, the second laterally compressed; sterile lemma shorter than the glumes, empty, hyaline; fertile lemma hyaline, narrow, entire or bifid, usually bearing a bent and twisted awn from the apex or from between the lobes; palea hyaline, small or wanting; pedicellate spikelet awnless, staminate.

1a. Racemes solitary on each peduncle; rachis joints oblique and hollow at the summit; racemes few in a narrow elongate inflorescence; sessile spikelet 6 to 10 mm. long.

Culms strictly erect; sessile spikelet 6 to 8 mm. long; hairs on the rachis and sterile pedicel inconspicuous, bunchgrass without rhizomes . . . . *A. scoparius*

Culms decumbent at base; sessile spikelet about 1 cm. long; hairs on the rachis and sterile pedicel rather prominent; slender rhizomes present . . . . *A. littoralis*

1b. Racemes 2 to numerous on each peduncle.

2a. Racemes 2 to several on each peduncle, digitate; joints of rachis slender.

3a. Pedicellate spikelet staminate, similar to the sessile spikelet, but awnless.

Rhizomes short or wanting; rachis joint and sterile pedicel ciliate, the joints short-hispid at base; awn of sessile spikelet 1 to 2 cm. long. . . . . *A. gerardi*

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[5] Descriptions of those genera for which only one species is given are a composite of the generic and species description.

Rhizomes well developed; rachis joint and sterile pedicel densely long-villous; awn of sessile spikelet rarely more than 5 mm. long, often obsolete . . . . *A. hallii*
3b. Pedicellate spikelet reduced to 1 or 2 glumes, or obsolete, pedicel only developed; racemes silky-villous.
4a. Peduncle not more than 1 cm. long, the dilated spathes exceeding the 2 (rarely 3 to 4) racemes.
Upper sheaths inflated spathelike, aggregate, the late inflorescence a flabellate tuft . . . . *A. elliottii*
Upper sheaths not inflated and aggregate . . . . *A. virginicus*
4b. Peduncles 2 cm. long or more, mostly 5 to 15 cm. long.
Upper sheaths inflated; mixed short and long peduncles . . . . *A. elliottii*
Upper sheaths not inflated; racemes copiously long-villous, hairs about twice as long as spikelet . . . . *A. ternarius*
2b. Racemes several to numerous (rarely few) in a leafless panicle usually on a long axis; joints of the rachis flat, margins thick and ciliate, the center very thin; racemes conspicuously woolly; pedicellate spikelet reduced; spikelets awned . *A. saccharoides*

Aristida:
Spikelets 1-flowered, rachilla disarticulating above the glumes; glumes equal or unequal, narrow, acute, acuminate, or awn-tipped; lemma indurate, narrow, terete, convolute, with a hard, sharp-pointed, usually minutely bearded callus, terminating above in a usually trifid awn, the base undivided, forming a column.

1a. First glume about half as long as the second; awns 2 to several cm. long . . . . *A. longiseta*
1b. Glumes usually about equal, or the first sometimes a little longer .
Sheaths lanate-pubescent; central awn 1.5 to 2.5 cm. long, spreading or reflexed from curved base . . . . *A. lanosa*
Sheaths not lanate-pubescent; awns horizontally spreading at maturity . . . . *A. purpurascens*

Arundinaria:
Spikelets 8- to 12-flowered, large, the rachilla disarticulating above the glumes and between the florets; glumes unequal, shorter than the lemmas, the first minute or wanting; lemmas papery, rather fragile, about 11-nerved, lanceolate, keeled, mostly 1.5 to 2.0 cm. long, sometimes tapering into an awn 4 mm. long; palea about as long as the lemma, prominently 2-keeled, scabrous on keels; rachilla joints densely hirsute. Perennial woody culms with extensively creeping rhizomes, culms as much as 2 cm. thick and 2 to 8 m. tall . . . . *A. gigantea*

Bouteloua:
Spikelets 1-flowered with the rudiments of 1 or more florets above, sessile in 2 rows along one side of the rachis; glumes 1-nerved, the first shorter and narrower; lemma as long as or a little longer than the second glume, 3-nerved, the nerves extending into short awns or mucros; palea sometimes 2-awned; rudimentary florets various, usually 3-awned, the awns usually longer than those of the fertile lemma.

1a. Spikelets not pectinately arranged, the spikes falling entire; culms erect, 50 to 80 cm. tall; spikes 35 to 50, 1 to 2 cm. long, twisted to one side of a 15 to 25 cm. erect slender axis; spikelets 5 to 8, 6 to 10 mm. long; plant with scaly rhizomes . . *B. curtipendula*
1b. Spikelets pectinately arranged, spikes persistent, florets falling from persistent glumes; spikes normally 2, sometimes 1 to 4.
Rachis prolonged beyond the spikelets as a naked point; spikelets 35 to 45 . . . . . *B. hirsuta*
Rachis not prolonged; spikelets as many as 80 . . . . *B. gracilis*

Brachyelytrum:
Spikelets 1-flowered, rachilla disarticulating above the glumes, prolonged behind the palea as a slender naked bristle; glumes minute, the first often obsolete, the second 0.5 to 2 mm. long; lemma subterete, about 1 cm. long, 5-nerved, the base extending into a pronounced oblique callus, the apex terminating in a straight, scabrous awn 1 to 3 cm. long; culms 60 to 100 cm. tall, blades 7 to 15 cm. long, 1 to 1.5 cm. wide, widely spaced on culm; plants with short, slender, knotty rhizomes . . . . *B. erectum*

Bromus:

Spikelets several- to many-flowered, rachilla disarticulating above the glumes and between the florets; glumes unequal, acute, the first 1- to 3-nerved, the second usually 3- to 5-nerved; lemmas convex on the back or keeled, 5- to 9-nerved, 2-toothed, awned from between the teeth or awnless; palea usually shorter than the lemma, ciliate on the keels.

1a. Creeping rhizomes present; lemmas awnless or short-awned; panicle erect, the branches ascending . . . . *B. inermis* (exotic)

1b. Creeping rhizomes not present.

2a. Lemmas glabrous, blades broad and lax, 6 to 10 mm. wide . . . . *B. purgans*

2b. Lemmas pubescent.

Lemmas pubescent along the margin and on lower part of the back, the upper part glabrous, awn 3 to 5 mm. long; panicle long, open, the branches slender and drooping. . . . . *B. ciliatus*

Lemmas pubescent rather evenly over the back, usually more densely so along the lower part of the margin.

Panicle small, dropping, usually not more than 10 cm. long; spikelets densely and conspicuously pubescent; sheaths and blades (except uppermost in some) conspicuously pubescent . . . . *B. kalmii*

Panicle larger, usually erect, the branches more or less drooping; blades mostly wide and lax; sheaths with prominent flanges at the mouth . . . . . . *B. latiglumis*

Buchloe:

Plants dioecious or monoecious. Staminate spikelets 2-flowered, sessile and closely imbricate, in 2 rows on one side of a slender rachis, forming a short spike; glumes somewhat unequal, rather broad, 1-nerved; lemmas longer than the glumes, 3-nerved, whitish; palea as long as lemma. Pistillate spikelets mostly 4 or 5 in a short spike or head, usually 2 heads to an inflorescence, the thickened indurate rachis and broad outer second glumes forming a rigid white obliquely globular structure crowned by the green-toothed summits of the glumes. Low stoloniferous plants with short curly blades, staminate flowers in 2 or 3 short spikes, pistillate in sessile heads partly hidden in leaves . . . . *B. dactyloides*

Calamagrostis:

Spikelets 1-flowered, rachilla disarticulating above the glumes, prolonged behind the palea as a short, often hairy bristle; glumes about equal, acute or acuminate; lemma shorter and usually more delicate, usually 5-nerved, the midnerve exserted as an awn; the callus bearing a tuft of hairs, these often copious and as long as the lemma.

1a. Awn geniculate, protruding sidewise from the glumes; callus hairs rather sparse, shorter than the lemma, plants rhizomatous.

Culms stiffly erect, blades erect, culms few in small tufts, less than 40 cm. tall, panicle spikelike . . . . *C. montanensis*

Culms solitary or few in tufts, rather rigid, 30 to 60 cm. tall; blades erect, flat 4 to 5 mm. wide as contrasted to 1 or 2 mm. wide in *C. montanenis;* panicle scarcely spikelike; plants grow in bogs, wetlands . . . . *C. pickeringii*

Culms slender, 35 to 100 cm. tall; sheaths and blades scabrous; callus hairs in two tufts on the sides of the lemma . . . . *C. lacustris*

1b. Awn straight, not protruding from the glumes; callus hairs usually not much shorter than the lemma; plants with creeping rhizomes.

Panicle rather loose and open, somewhat nodding; blades elongate, flat, rather lax, 4 to 8 mm. wide. . . . . *C. canadensis*

Panicle more or less contracted; blades involute, or if flat, rigid.

Blades firm, scabrous; ligule 4 to 6 mm. long . . . . *C. inexpansa*

Blades relatively soft; ligule 1 to 3 mm. long . . . . *C. neglecta*

Calamovilfa:

Spikelets 1-flowered, rachilla disarticulating above the glumes, pale, 6 to 7 mm. long, glumes acuminate; lemma somewhat shorter than the second glume; the callus hairs copious, more than half as long as the lemma; panicle 15 to 35 cm. long, rather narrow, branches ascending; culms mostly solitary, 50 to 180 cm. tall, with strong creeping rhizomes; blades firm, elongate, 4 to 8 mm. wide at base, tapering to a long fine point . . . . *C. longifolia*

Catabrosa:

Spikelets mostly 2-flowered, short-pediceled, about 3 mm. long, rachilla disarticulating above the glumes and between the florets; panicle erect, 10 to 20 cm. long, oblong or pyramidal, yellow to brown, branches spreading in somewhat distant whorls; culms 10 to 40 cm. long; blades less than 10 cm. long, 2 to 8 mm. wide. Aquatic plant, streambanks . . . . *C. aquatica*

Cinna:

Spikelets 1-flowered, disarticulating below the glumes; rachilla forming a stipe below the floret and produced behind the palea as a minute bristle; glumes equal or subequal, 1- to 3-nerved; lemma similar to the glumes, nearly as long, 3-nerved, bearing a minute, short, straight awn just below the apex (rarely awnless); palea 1-keeled.

Spikelets 5 mm. long; panicle rather dense, the branches ascending, culms erect, usually 1 to 1.5 m. tall, solitary or few in a tuft; ligule rather prominent, thin; blades flat, scabrous, mostly less than 1 cm. wide; panicle somewhat nodding, grayish, the branches ascending; awn of lemma minute . . . . *C. arundinacea*

Spikelets 3.5 to 4 mm. long; blades as much as 1.5 cm. wide; panicle green, loose, the branches spreading or drooping . . . . *C. latifolia*

Danthonia:

Spikelets several-flowered, rachilla readily disarticulating above the glumes and between the florets; glumes about equal, broad, papery, acute mostly exceeding the upper floret; lemmas rounded on the back, obscurely several-nerved, the apex bifid, the lobes acute, usually extending into slender awns; a stout flat, twisted, geniculate awn arising from between the lobes; panicles few-flowered.

Lemmas glabrous on the back, pilose on the margin only; panicle purplish, narrow, 2 to 5 cm. long . . . . *D. intermedia*

Lemmas sparsely villous on the back; blades rarely more than 15 cm. long, forming basal tuft . . . . *D. spicata*

Deschampsia:

Spikelets 2-flowered, disarticulating above the glumes and between the florets; the hairy rachilla prolonged beyond the upper floret; glumes about equal, acutish, membranaceous; lemmas thin, truncate and 2- to 4-toothed at summit, bearded at base, bearing a slender awn from or below the middle.

Blades filiform flexuous, awn exserted, geniculate, twisted; leaves mostly in a basal tuft . . . . *D. flexuosa*

Blades flat or folded, stiff; awn included or slightly exserted, straight to weakly geniculate . . . . *D. caespitosa*

Diarrhena:

Spikelets few-flowered, rachilla disarticulating above the glumes and between the florets; glumes unequal, acute, shorter than the lemmas, the first 1-nerved, the second 3- to 5-nerved; lemmas chartaceous, pointed, 3-nerved, the nerves converging in the point; the upper floret reduced; palea chartaceous, obtuse; at maturity the lemma and palea widely spread by the large, turgid beaked caryopsis with hard shining pericarp; culms slender, about 1 m. tall, arched-leaning, leaves approximate below the middle of the culm; blades elongate, 1 to 2 cm. wide; panicle long-exserted, drooping, branches few; plants with slender rhizomes . . . . *D. americana*

Distichlis:

Plants dioecious; spikelets several-to many-flowered, rachilla of pistillate spikelets disarticulating above glumes and between florets; glumes unequal, 3- to 7-nerved; lemmas closely imbricate firm, the pistillate coriaceous; palea margins bowed out near base; the keels with wide serrulate erose or lacerate wings; rhizomatous . . . . *D. stricta*

Elymus:

Spikelets 2- to 6-flowered, in pairs (1 to 3 in a few species) at each node, rachilla distorted at base, bringing the florets more or less dorsiventral to the rachis; rachilla disarticulating above the glumes and between the florets; glumes equal, somewhat asymmetric, usually rigid, narrow to subulate, 1- to several-nerved, acute to aristate; lemmas rounded on the back or nearly terete, obscurely 5-nerved, acute or usually awned from the tip.

1a. Rhizomes present; glumes lanceolate, papery, awnless or awn-pointed; lemmas papery; plant of coastal dunes . . . . *E. mollis*

1b. Rhizomes wanting.
  2a. Rachis tardily disjointing; glumes and lemmas awned; spike mostly 5 to 7 mm. wide; blades subinvolute . . . . *E. macounii*
  2b. Rachis continuous.
    Glumes subulate; awns of lemma as long as the body or longer; glumes not broadened above the base.
      Awns straight; lemmas about 1.2 mm. wide . . . . *E. villosus*
      Awns flexuous-divergent; lemmas 2 mm. wide . . . . *E. interruptus*
    Glumes lanceolate or narrower, broadened above the base, strongly 3- to several-nerved, glumes relatively thin, flat, not indurate at base . . . . *E. glaucus*
    Glumes firm, indurate but not terete at base; awns curved when dry, 2 to 3 cm. long as compared with the straight 1 cm. long awn of *E. virginicus*. . . . . *E. canadensis*
    Glumes firm, indurate at base, awns straight, base of glumes terete.
      Glumes about 1 mm. wide about the middle, bases not bowed out; palea much shorter than the lemma . . . . *E. riparius*
      Glumes 1.5 to 2.0 mm. wide about the middle, bases bowed out; palea as long as the lemma . . . . *E. virginicus*

Eragrostis:

Spikelets few- to many-flowered; florets usually closely imbricate, rachilla disarticulating above the glumes and between the florets, or continuous; lemmas deciduous; paleas persistent; glumes somewhat unequal, shorter than the first lemma, acute or acuminate, 1-nerved, or the second rarely 3-nerved; lemmas acute or acuminate, 3-nerved, the lateral nerves sometimes obscure; palea usually about as long as the lemma.

1a. Nerves of lemma obscure; lemma rounded on back; spikelets about 1.5 mm. wide, 3- to 8-flowered . . . . *E. intermedia*
1b. Nerves of lemma evident, usually prominent, lemmas keeled.
  Panicle longer than broad.
    Spikelets mostly not more than 6-flowered, purplish . . . . *E. trichodes*
    Spikelets mostly 8- to 15-flowered, stramineous to bronze . . . . *E. pilifera*
  Panicle at maturity about as broad as long, purple, the branches slender but rigid . . . . *E. spectabilis*

Erianthus:

Spikelets all alike, in pairs along a slender axis, one sessile, the other pedicellate, the rachis disarticulating below the spikelets, the rachis joint and pedicel falling attached to the sessile spikelet; glumes coriaceous, equal, usually copiously clothed, at least at the base, with long silky spreading hairs; sterile lemma hyaline; fertile lemma hyaline, the midnerve extending into a slender awn; palea small, hyaline. Perennial reedlike grasses, with elongate flat blades and terminal oblong, usually dense silky panicles.

1a. Spikelets naked, or nearly so, at base, panicle 20 to 40 cm. long, narrow, branches closely appressed, awn 15 mm. long . . . . *E. strictus*
1b. Spikelets with a conspicuous tuft of hairs at base.
  Awn flat, spirally coiled at base, upper portion more or less bent or loosely spiral, panicle conspicuously woolly, hiding branches . . . . *E. alopecuroides*
  Awn terete or flattened at base, not coiled, upper portion straight or flexuous, panicle not woolly . . . . *E. brevibarbis*

Festuca:

Spikelets few- to several-flowered (rarely 1-flowered in some spikelets), rachilla disarticulating above the glumes and between the florets, uppermost floret reduced; glumes narrow, acute, unequal, the first sometimes very small; lemmas rounded on the back, 5-nerved, nerves often obscure, acute or rarely obtuse, awned from the tip, or rarely from a minutely bifid apex, sometimes awnless.

1a. Blades flat, rather soft and lax, mostly more than 3 mm. wide; lemmas awnless or with awns less than 2 mm. long.
  2a. Spikelets oblong to linear, mostly 8- to 10-flowered and more than 10 mm. long . . . . *F. elatior* (exotic)

2b. Spikelets ovate or oval, mostly not more than 5-flowered, less than 10 mm. long.

Spikelets loosely scattered in a very open panicle with long slender branches . *F. obtusa*

Spikelets somewhat aggregate toward the ends of rather short branches of a less open nodding panicle . . . . *F. paradoxa*

1b. Blades involute or if flat less than 3 mm. wide.

3a. Culms decumbent at the usually red, fibrillose base; native of western United States, planted eastward . . . . *F. rubra*

3b. Culms erect.

4a. Lemmas 7 to 10 mm. long, scabrous, culms densely tufted, rather stout . . . . *F. scabrella*

4b. Lemmas mostly not more than 7 mm. long, awned, panicle narrow, often spikelike; culms mostly less than 30 cm. tall. Native of western United States planted eastward . . . . *F. ovina*

Festuca arundinacea (exotic) reed fescue; Alta fescue (sometimes called tall fescue). Culms somewhat taller and more robust than in *F. elatior*, and without rhizomes; blades longer; panicles 15 to 32 cm. long with more numerous branches and spikelets, the spikelets broader, mostly looser; the lemmas 7 to 10 mm. long. Roadsides and meadows.

Glyceria:

Spikelets few- to many-flowered, subterete or slightly compressed, rachilla disarticulating above the glumes and between the florets; glumes unequal, short, obtuse or acute, usually scarious, mostly 1-nerved; lemmas broad, convex on back, firm, obtuse, scarious at apex, 5- to 9-nerved, nerves parallel, usually prominent. Tall aquatic or marsh perennials.

1a. Spikelets linear, nearly terete, usually 1 cm. long or more, appressed on short pedicels; panicles narrow, erect.

2a. Lemmas acute, much exceeded by the palea; culms compressed, lax, creeping and rooting below . . . . *G. acutiflora*

2b. Lemmas obtuse; palea about as long or slightly longer than the lemma.

Lemmas glabrous between the slightly scabrous nerves, strongly 7-nerved; spikelets appressed . . . . *G. borealis*

Lemmas scaberulous or hirtellous between the usually distinctly scabrous nerves, pale or green; palea usually exceeding the lemma . . . . *G. septentrionalis*

1b. Spikelets ovate or oblong, more or less compressed, usually not more than 5 mm. long; panicle usually nodding.

3a. Lemmas with 7 usually prominent nerves; second glume 1-nerved; sheaths, at least the upper, closed from below the summit; panicle open, lax.

4a. Nerves of lemma evident but not prominent; spikelets somewhat broad in appearance . . . . *G. canadensis*

4b. Nerves of lemma prominent.

First glume not more than 1 mm. long; plants in large pale green tussocks . . . . *G. striata*

First glume usually about 1.5 mm. long; culms tufted, stout. . . . . *G. grandis*

3b. Lemmas with 5 prominent nerves; second glume 3-nerved; sheaths open; panicle open, lax; culms slender, decumbent, weak.

Blades 4 to 8 mm. wide; culms 30 to 100 cm. long; spikelets 4- to 7-flowered, 6 to 7 mm. long . . . . *G. pallida*

Blades 1 to 3 mm. wide; culms 20 to 40 cm. long; spikelets mostly 3- to 5-flowered, 4 to 5 mm. long . . . . *G. fernaldii*

Gymnopogon:

Spikelets 1- or rarely 2- or 3-flowered, nearly sessile, appressed and usually remote in 2 rows along one side of a slender continuous rachis, the rachilla disarticulating above the glumes and prolonged behind the 1 or more fertile florets as a slender stipe, bearing a rudimentary floret, this sometimes with 1 or 2 slender awns; glumes narrow, acuminate, 1-nerved, usually longer than the floret; lemmas narrow, 3-nerved, the apex minutely bifid, bearing a slender awn between the teeth, rarely awnless; blades short and stiff, panicle branches stiff, widely spreading at maturity; culms 30 to 60 cm. tall in small tufts with short scaly rhizomes . . . . *G. ambiguus*

Helictotrichon:

Spikelets 3- to several-flowered, rachilla bearded, disarticulating above the glumes and between the florets; glumes about equal 3- to 5-nerved, subhyaline except toward base; lemmas convex, the lower half subindurate and several-nerved, the upper part subhyaline, awned from about the middle, the awns twisted and geniculate, much exceeding the spikelets; culms densely tufted, 20 to 40 cm. tall; blades firm, 1 to 3 mm. wide; panicle long-exserted, narrow; awn 1 to 1.5 cm. long . . . . *H. hookeri*

Hierochloe:

Spikelets with 1 terminal perfect floret and 2 staminate florets, disarticulating above the glumes; glumes equal, 3-nerved, broad, thin papery, smooth, acute; staminate lemmas about as long as the glumes, awnless or nearly so, boat-shaped, hispidulous, hairy along the margin; fertile lemma somewhat indurate, smooth or nearly so, awnless; palea 3-nerved; culms 30 to 60 cm. tall, tufted, with leafy shoots at base and short rhizomes; erect, slender, sweet-smelling grass, with small panicles of broad bronze-colored spikelets . . . . *H. odorata*

Hordeum:

Spikelets 1-flowered (rarely 2), 3 (sometimes 2) together at each node of the articulate rachis, the back of the lemma turned from the rachis, the middle spikelet sessile, the lateral ones pediceled (except *H. montanense*); rachilla disarticulating above the glumes and, in the central spikelet, prolonged behind the palea as a bristle and sometimes bearing a rudimentary floret; lateral spikelets usually imperfect, sometimes reduced to bristles; glumes narrow, often subulate and awned, standing in front of the spikelet; lemmas rounded on the back, 5-nerved, usually obscurely so, tapering into a usually long awn.

1a. Lateral spikelets sessile usually well developed; central spikelet, usually 2-flowered; culms 60 to 100 cm. tall; blades 5 to 8 mm. wide . . . . *H. montanense*
1b. Lateral spikelets pedicellate, reduced to 1 to 3 spreading awns; culms 30 to 60 cm. tall; blades 2 to 5 mm. wide . . . . *H. jubatum*

Hystrix:

Spikelets 2- to 4-flowered, 1 to 4 at each node of a continuous flattened rachis, horizontally spreading at maturity; glumes reduced to short or minute awns, the first usually obsolete, both often wanting in the upper spikelets; lemmas glabrous or pubescent convex, rigid, tapering into long awns (1 to 4 cm. long), obscurely 5-nerved; culms slender, 60 to 120 cm. tall . . . . *H. patula*

Koeleria:

Spikelets 2- to 4-flowered, compressed, rachilla disarticulating above the glumes and between the florets, prolonged beyond the perfect florets as a slender bristle or bearing a reduced floret at the tip; glumes usually about equal in length, unlike in shape, the first narrow, sometimes shorter, 1-nerved, the second wider, broadened above the middle, 3- to 5-nerved; lemmas somewhat scarious, shining, the lowermost a little longer than the glume, obscurely 5-nerved, acute or short-awned; the awn, if present, borne just below the apex; culms tufted, 30 to 60 cm. tall; panicle spikelike . . . . *K. cristata*

Leersia:

Spikelets 1-flowered, strongly compressed laterally, disarticulating from the pedicel; glumes wanting; lemma chartaceous, broad, oblong to oval, boat-shaped, usually 5-nerved, the lateral pair of nerves close to the margins, these and the keel often hispid-ciliate, intermediate nerves sometimes obscure; palea as long as the lemma, much narrower, usually 3-nerved; the keel usually hispid-ciliate, the lateral nerves close to the margins, the margins firmly held by the margins of the lemma; plants usually with rhizomes, scabrous blades, open panicles.

1a. Spikelets pale, broadly oval, very flat, 3 to 4 mm. wide; culms straggling with creeping rhizomes; sheaths scabrous toward summit; panicle open, drooping . . . *L. lenticularis*
1b. Spikelets elliptic, not more than 2 mm. wide, plants with scaly rhizomes.
  2a. Lower panicle branches solitary; spikelets 3 mm. long, 1 mm. wide . . . . *L. virginica*
  2b. Lower panicle branches fascicled; spikelets 5 mm. long, 1.5 to 2.0 mm. wide. . . . *L. oryzoides*

Leptoloma:

Spikelets on slender pedicels; first glume minute or obsolete; second glume 3- to 5-nerved, nearly as long as the 5- to 7-nerved sterile lemma, a more or less prominent stripe of appressed silky hairs down the internerves and margins of each, the sterile lemma empty or enclosing a minute nerveless rudimentary palea; fertile lemma cartilaginous, elliptic, acute, brown, the delicate hyaline margins enclosing the palea; panicle open or diffuse, one-third to one-half the entire length of the plant, purplish and short-exserted, pilose in axils; the spikelets solitary on long capillary pedicels; culms decumbent, knotty, often densely hairy at base; most common on sandy soils . . . . *L. cognatum*

Melica:

Spikelets 2- to several-flowered (rarely with 1 perfect floret), the rachilla disarticulating above the glumes and between the fertile florets, prolonged beyond the perfect florets and bearing 2 to 3 approximate gradually smaller empty lemmas, each enclosing the one above; glumes somewhat unequal, thin, often papery, scarious-margined, obtuse or acute, sometimes nearly as long as the lower floret, 3- to 5-nerved, the nerves usually prominent; lemmas convex, several-nerved, membranaceous or rather firm, scarious-margined, sometimes conspicuously so, awnless or sometimes awned from between the teeth of a bifid apex; culms often swollen at the base forming a corm; sheaths closed.

1a. Spikelets narrow; lemma long-awned from a bifid apex (awn 3 to 5 mm. long); panicle branches few, naked on lower half . . . . *M. smithii*
1b. Spikelets broad; lemmas obtuse, awnless; culms not distinctly bulbous at base; spikelets nodding to pendulous or capillary pedicels.
  2a. Glumes nearly as long as the usually 2-flowered spikelet; apexes of the 2 florets about the same height; panicle simple or nearly so . . . . *M. mutica*
  2b. Glumes shorter than the usually 3-flowered spikelet; apex of second floret a little higher than that of the first; panicle compound . . . . *M. nitens*

Milium:

Spikelets 1-flowered, disarticulating above the glumes; glumes equal, obtuse, membranaceous, rounded on the back, scaberulous; lemma a little shorter than the glumes, obtuse, obscurely nerved, rounded on the back, dorsally compressed, in fruit becoming indurate, smooth and shining, the margins enclosing the lemma as in *Panicum;* smooth, somewhat succulent perennial; culms slender, erect from bent base, 1.0 to 1.5 m. tall; blades mostly 10 to 15 cm. tall, flat, lax, 8 to 15 mm. wide; slender panicle branches in remote spreading or drooping pairs or fascicles . . . . *M. effusum*

Muhlenbergia:

Spikelets 1-flowered (occasionally 2-flowered), the rachilla disarticulating above the glumes; glumes usually shorter than the lemma, sometimes as long, obtuse to acuminate or awned, keeled or convex on back, the first sometimes small, rarely obsolete; lemma firm-membranaceous, 3-nerved (sometimes obscure or rarely an additional pair) with a very short callus; rarely long pilose, usually minutely pilose, the apex acute, awned from the tip or just below it, or from between very short lobes, sometimes only mucronate, the awn straight or flexuous.

1a. Rhizomes present.
  2a. Blades 2 mm. wide or less, mostly short and involute; panicles open; spikelets on slender pedicels, awnless, panicle as broad as long; culms branching at base . . . *M. asperifolia*
    Panicles narrow, somewhat spikelike; culms wiry, nodulose-roughened, erect or decumbent . . . . *M. richardsonis*
  2b. Blades flat, at least some of them more than 3 mm., usually 5 mm. wide or more.
    3a. Panicles loosely flowered, slender, much exceeding the leaves (see also *M. sylvatica*); glumes broad below, abruptly pointed, shorter than the body of the lemma.
      Culms slender, rather weak, becoming much branched, glabrous or slightly scabrous below the nodes; lemma acuminate, 2.5 to 3.5 mm. long, awned . . . . *M. brachyphylla*
      Culms erect, simple or sparingly branched.
        Spikelets 1.5 to 2.5 mm. long; lemma awnless or awn-tipped; blades commonly not more than 5 to 7 mm. wide . . . . *M. sobolifera*

Spikelets 3 to 4 mm. long; lemma with an awn 2 to 5 times as long as the body; blades commonly 8 mm. or more wide . . . . *M. tenuiflora*
3b. Panicles usually densely flowered (sometimes loose in *M. sylvatica*); glumes tapering from base to apex; culms commonly freely branching (often simple in *M. glomerata*).
4a. Glumes with stiff scabrous awn-tips, much exceeding the awnless lemma; panicles terminal on the culm or leafy branches, compact, interrupted, bristly.
Culms mostly simple or branching at base; internodes minutely puberulent; sheaths not or scarcely keeled . . . . *M. glomerata*
Culms subcompressed, mostly branching from the middle nodes; internodes mostly smooth and glossy except at summit; sheaths keeled . . . . *M. racemosa*
4b. Glumes acuminate, sometimes awn-tipped but not stiff and exceeding the lemma; panicles terminal and axillary, numerous, not bristly.
Culms glabrous below the nodes; panicles not compact, the branches ascending; plants sprawling, top heavy, branchlets geniculate-spreading. *M. frondosa*
Culms strigose below the nodes; panicles compact or if not the branches erect or nearly so; plants often bushy-branching but not sprawling with geniculate branchlets.
Callus hairs wanting; lemma smooth, awnless . . . . *M. glabriflora*
Callus hairs present; lemma pubescent below.
Panicles not compactly flowered; lemma with awn as much as 10 mm. or more long; some of the blades 10 to 15 cm. or more long . . . . *M. sylvatica*
Panicles compactly flowered or, if not, lemma awnless; blades mostly less than 10 cm. long . . . . *M. mexicana*
1b. Rhizomes wanting; culms tufted, usually erect.
5a. Culms decumbent and rooting at the nodes.
Spikelets awnless; panicles open, diffuse . . . . *M. uniflora*
Spikelets awned; panicles narrow, branches ascending or appressed.
Glumes minute, the first sometimes wanting . . . . *M. schreberi*
Glumes evident, as much as 2 mm. long . . . . *M. curtisetosa*
5b. Culms erect or spreading, but not rooting at the nodes.
Panicle narrow or spikelike, short branches appressed . . . . *M. cuspidata*
Panicle diffuse; the branches capillary; pedicels usually much longer than spikelets . . . . *M. capillaris*

Oryzopsis:

Spikelets 1-flowered, disarticulating above the glumes; glumes about equal, obtuse or acuminate; lemma indurate, usually about as long as the glumes, broad, oval or oblong, nearly terete, usually pubescent, with a short, blunt, oblique callus, and a short deciduous, sometimes bent and twisted awn; palea enclosed by the edges of the lemma.

1a. Spikelets, excluding awn, 6 to 9 mm. long; blades flat.
2a. Basal blades elongate, uppermost not more than 1 cm. long; fertile culms widely spreading or prostrate, the 2 or 3 sheaths bearing reduced or obsolete blades; lemma pale, awn 5 to 10 mm. long . . . . *O. asperifolia*
2b. Basal blades reduced, upper elongate; culms erect, tufted from a knotty rhizome; lemma blackish; awn 1.5 to 2.5 cm. long . . . . *O. racemosa*
1b. Spikelets, excluding awn, 5 mm. long or less; blades involute or subinvolute.
3a. Awn not more than 2 mm. long, nearly straight; panicle narrow, 3 to 6 cm. long . . . . *O. pungens*
3b. Awn 10 to 20 mm. long, weakly twice-geniculate; panicle open, 5 to 10 cm. long. . . . . *O. canadensis*

Panicum:

Spikelets more or less compressed dorsiventrally; glumes 2, herbaceous, nerved, usually very unequal, the first often minute, the second typically equaling the sterile lemma, the latter of the same texture and simulating a third glume, bearing in its axil a membranaceous or hyaline palea and sometimes a staminate flower; the palea rarely wanting; fertile lemma chartaceous-indurate, typically obtuse, the nerves obsolete, the margins inrolled over an enclosed palea of the same texture.

Key to Subgenera:

Basal leaves usually distinctly different from those of the culm, forming a winter rosette; culms at first simple; the spikelets of the primary panicle not perfecting seed, later usually becoming much branched, the small secondary panicles with cleistogamous fruitful spikelets . . . . DICHANTHELIUM
Basal leaves similar to the culm leaves, not forming a winter rosette; spikelets all fertile . . . . EUPANICUM

Key to subgenus Dichanthelium *(Panicum* genus)

1a. Blades elongate, not more than 5 mm. wide, 20 times as long as wide; autumnal phase branching from the base only (from lower nodes in *P. werneri*) . . . . I. DEPAUPERATA
1b. Blades not elongate (or if so, more than 5 mm. wide and autumnal phase not branching from the base); branching from the culm nodes or rarely remaining simple.
2a. Blades long, stiff, tapering to both ends; autumnal phase bushy-branched above . . . . II. BICKNELLIANA
2b. Blades not long and stiff (somewhat so in *P. oligosanthes*); not bushy-branched; plants forming a distinct winter rosette.
3a. Spikelets turgid, blunt, strongly nerved (not strongly turgid in *P. oligosanthes*); blades rarely as much as 1.5 cm. wide (sometimes 2 cm. in *P. ravenelii* and *P. xanthophysum*) . . . . VIII. OLIGOSANTHIA
3b. Spikelets not turgid, blunt, or strongly nerved.
4a. Ligule of conspicuous hairs, usually 3 to 5 mm. long.
Sheaths glabrous or only the lowermost somewhat pubescent . . . . IV. SPRETA
Sheaths strongly pubescent . . . . V. LANUGINOSA
4b. Ligule obsolete or nearly so (manifest in *P. tsugetorum*).
5a. Spikelets nearly spherical at maturity; blades glabrous, firm, cordate; plants usually sparingly branched . . . . VII. SPHAEROCARPA
5b. Spikelets usually obovate or elliptic.
6a. Blades of midculm elongate, less than 1.5 cm. wide.
Culms usually tall; spikelets pointed, abruptly so in the velvety *P. scoparium* . . . . IX. SCOPARIA
6b. Blades of midculm not elongate.
7a. Blades cordate, 1 to 3 cm. wide (5 to 12 mm. in *P. ashei*); spikelets pubescent.
Spikelets 2.5 to 3.0 mm. long; sheaths glabrous or minutely puberulent . . . . X. COMMUTATA
Spikelets 3.0 to 5.0 mm. long . . . . XI. LATIFOLIA
7b. Blades not cordate, less than 1 cm. wide.
Sheaths crisp- or appressed-pubescent; blades firm; spikelets pubescent . . . . VI. COLUMBIANA
Sheaths glabrous or ciliate only in the autumnal phase (the lower velvety in *P. mattamuskeetense*) . . . . III. DICHOTOMA

I. DEPAUPERATA: *(Panicum)*
1a. Spikelets about 3.5 mm. long, beaked . . . . *P. depauperatum*
1b. Spikelets 3 mm. long or less (sometimes 3.2 mm. in *P. perlongum*, not beaked.
2a. Culms single or few in a tuft; spikelets turgid, blunt, 2.7 to 3.2 mm. long; prairie plants . . . . *P. perlongum*
2b. Culms in large tufts; spikelets not turgid, 2.2 to 2.7 mm. long; plants of woods.
Sheaths pilose; spikelets 2.2 to 2.7 mm. long, pilose . . . . *P. linearifolium*
Sheaths glabrous; spikelets 2.2 to 2.3 mm. long, glabrous or sparingly pilose. . *P. werneri*

II. BICKNELLIANA: *(Panicum)*
Spikelets 2.5 to 2.8 mm. long; blades not more than 9 mm. wide . . . . *P. bicknellii*
Spikelets 3 mm. long; blades as much as 12 mm. wide . . . . *P. calliphyllum*

III. DICHOTOMA: *(Panicum)*

- 1a. Nodes, at least the lower, bearded (sometimes not in *P. boreale*)
  - 2a. Spikelets 1.5 to 1.6 mm. long, usually glabrous . . . . . *P. microcarpon*
  - 2b. Spikelets 2 mm. long or more.
    - Spikelets glabrous, 2 mm. long.
      - Autumnal phase erect, tree-shaped; blades 5 mm. wide . . . . . *P. dichotomum*
      - Autumnal phase topheavy-reclining; blades 6 to 10 mm. wide . . . . . *P. barbulatum*
    - Spikelets pubescent.
      - Blades all velvety . . . . . *P. annulum*
      - Blades glabrous or only lowermost velvety.
        - Primary blades mostly erect; autumnal phase sparingly branching, branches erect; blades and panicles not much reduced . . . . . *P. boreale*
        - Primary blades spreading; blades and panicles of autumnal phase much reduced.
          - Spikelets 2 mm. long; autumnal phase profusely branching . . . . . *P. nitidum*
          - Spikelets 2.2 mm. long or more; autumnal phase less branching; lower sheaths and all nodes pubescent . . . . . *P. mattamuskeetense*
- 1b. Nodes not bearded.
  - 3a. Spikelets pubescent; culms soon prostrate, vinelike, the branches divaricate; plants bright green . . . . . *P. lucidum*
  - 3b. Spikelets glabrous (occasionally including *P. lucidum*); culms never prostrate.
    - Spikelets 2.2 mm. long or more, pointed; sheaths bearing pale glandular spots . . . . . *P. yadkinense*
    - Spikelets not more than 2 mm. long, not pointed . . . . . *P. dichotomum*

IV. SPRETA: *(Panicum)*

- Panicle narrow, one-fourth to one-third as wide as long . . . . . *P. spretum*
- Panicle open, two-thirds as wide as long, or more . . . . . *P. lindheimeri*

V. LANUGINOSA: *(Panicum)*

- 1a. Spikelets not more than 2 mm. long.
  - 2a. Plants grayish, velvety-pubescent . . . . . *P. auburne*
  - 2b. Plants pubescent, often villous, but not velvety.
    - 3a. Culms conspicuously pilose with long, horizontally spreading hairs . . . . . *P. praecocius*
    - 3b. Culms variously pubescent, if pilose the hairs not long and horizontally spreading.
      - 4a. Vernal blades glabrous or nearly so on upper surface; autumnal culms branching, forming widely spreading mats . . . . . *P. tennesseense*
      - 4b. Vernal blades pubescent on upper surface, sometimes pilose near base and margins only.
        - 5a. Spikelets 1.3 to 1.5 mm. long; vernal blades long; pilose on upper surface.
          - Autumnal phase widely decumbent-spreading, forming a mat; vernal culms soon geniculate-spreading; plants olivaceous . . . . . *P. albemarlense*
          - Autumnal phase erect or leaning, never forming a mat; plants yellowish green.
            - Axis of panicle pilose; panicle branches tangled, the lower drooping . . . . . *P. implicatum*
            - Axis of panicle puberulent only; panicle branches not tangled, the lower ascending . . . . . *P. meridionale*
        - 5b. Spikelets 1.6 to 2 mm. long; vernal blades pilose or pubescent.
          - Upper surface of blades pilose; spikelets 1.8 to 2 mm. long; autumnal phase decumbent-spreading . . . . . *P. subvillosum*
          - Upper surface of blades appressed-pubescent or pilose toward the base only; spikelets 1.6 to 1.8 mm. long; autumnal phase not decumbent-spreading . . . . . *P. huachucae*
- 1b. Spikelets 2.2 mm. long or more.
  - Spikelets 2.2 to 2.5 mm. long.
    - Pubescence on culms horizontally spreading; autumnal phase freely branching . . . . . *P. villosissimum*
    - Pubescence on culms appressed or ascending; autumnal phase rather sparingly branching.
      - Upper internodes shortened, the leaves approximate . . . . . *P. scoparioides*
      - Upper internodes not shortened, the copious pubescence silky . . . . . *P. pseudopubescens*
  - Spikelets 2.7 to 2.9 mm. long; culms stiff; blades conspicuously ciliate . . . . . *P. ovale*

VI. COLUMBIANA: *(Panicum)*

1a. Spikelets 2.8 to 2.9 mm. long; winter blades 1 to 3 cm. long, vernal blades 8 to 15 cm. long . . . . *P. deamii*

1b. Spikelets not more than 1.9 mm. long, obovate, turgid; culms crisp-puberulent or appressed-pubescent with crimped hairs; plants bluish or grayish green; panicle 3 to 7 cm. long.

Spikelets 1.8 to 1.9 mm. long . . . . *P. tsugetorum*

Spikelets 1.5 to 1.6 mm. long . . . . *P. columbianum*

VII. SPHAEROCARPA: *(Panicum)*

Culms spreading; blades obscurely nerved; panicle nearly as broad as long; autumnal phase prostrate-spreading . . . . *P. sphaerocarpon*

Culms erect or ascending; blades rather strongly nerved; panicle never more than two-thirds as broad as long, usually less; autumnal phase remaining erect . . . . . . *P. polyanthes*

VIII. OLIGOSANTHIA: *(Panicum)*

1a. Nodes bearded; blades velvety-pubescent beneath.

Plants lax, soft velvety; spikelets not more than 3 mm. long . . . . *P. malacophyllum*

Plants stiff, pubescence harsh; spikelets about 4 mm. long . . . . *P. ravenelii*

1b. Nodes not bearded (or obscurely so in *P. wilcoxianum*); blades not velvety.

2a. Panicle narrow, branches erect, or spreading only at anthesis; blades erect.

Spikelets not more than 3 mm. long; blades not more than 6 mm. wide . . . . *P. wilcoxianum*

Spikelets 3.7 to 4 mm. long; blades 8 to 20 mm. wide.

Blades papillose-hispid . . . . *P. leibergii*

Blades glabrous on both surfaces . . . . *P. xanthophysum*

2b. Panicle about as wide as long.

3a. Spikelets narrowly obovate, subacute; plant olivaceous, appressed-pubescent *P. oligosanthes*

3b. Spikelets broadly obovate, turgid, blunt; plants green, the pubescence, if present, not appressed.

4a. Blades erect, not more than 6 mm. wide; plants copiously hirsute throughout . . . . *P. wilcoxianum*

4b. Blades ascending or spreading, rarely less than 8 mm. wide, usually wider; plants not hirsute throughout.

Spikelets 3.2 to 3.3 mm. long; blades firm; sheaths or some of them more or less hispid. . . . . *P. scribnerianum*

Spikelets not more than 3 mm. long; blades rather thin; sheaths, or some of them, glabrous or sparsely hispid . . . . *P. helleri*

IX. SCOPARIA: *(Panicum)*

Pubescence soft-villous or velvety; spikelets abruptly pointed; vernal culms grayish olive green, 80 to 130 cm. tall, stout, erect or ascending, usually geniculate at base; blades 12 to 20 cm. long, 10 to 18 mm. wide . . . . *P. scoparium*

X. COMMUTATA: *(Panicum)*

Vernal phase usually purplish from a knotted crown; culms 25 to 50 cm. tall, erect, stiff, wiry, densely crisp-puberulent; blades thick and firm, 4 to 8 cm. long, glabrous; panicle 5 to 8 cm. long, loosely flowered; spikelets 2.4 to 2.7 mm. long; autumnal culms erect or topheavy, reclining . . . . *P. ashei*

Vernal culms 40 to 75 cm. tall, erect; sheaths glabrous or nearly so; blades 5 to 12 cm. long, 12 to 25 mm. wide; panicle 6 to 12 cm. long . . . . *P. commutatum*

XI. LATIFOLIA: *(Panicum)*

Sheaths strongly papillose-hispid, at least the lower and those of the branches . . . . *P. clandestinum*

Sheaths glabrous or softly villous.

Nodes glabrous; spikelets 3.4 to 3.7 mm. long . . . . *P. latifolium*

Nodes bearded; spikelets 4.0 to 4.5 mm. long . . . . *P. boscii*

Key to subgenus Eupanicum *(Panicum* genus)

1a. Spikelets short-pediceled along one side of the rachises, forming spikelike racemes (compare *Agrostoidia* with 1-sided but not spikelike panicle branches); racemes appressed . . . . (IV) OBTUSA

1b. Spikelets in open or sometimes contracted or congested panicles (somewhat 1-sided in *Agrostoidia).*
  2a. Sterile palea enlarged and indurate at maturity, expanding the spikelet; blades scarcely wider than their sheaths; spikelets about 2.3 mm. long, borne toward the ends of the few slender branches . . . . (III) LAXA
  2b. Sterile palea, if present, not enlarged.
    3a. Plants with conspicuous creeping scaly rhizomes.
      Spikelets long-pediceled, not secund, arranged in an open or contracted panicle . . . . (I) VIRGATA
      Spikelets short-pediceled, more or less secund along the nearly simple panicle branches . . . . (II) AGROSTOIDEA
    3b. Plants without creeping scaly rhizomes; panicles many-flowered; spikelets short-pediceled . . . . (II) AGROSTOIDEA

(I) VIRGATA: *(Panicum)*
  Spikelets less than 5 mm. long (rarely 6 mm.); first glume two-thirds to three-fourths as long as spikelet; rhizomatous . . . . *P. virgatum*

(II) AGROSTOIDEA *(Panicum)*
1a. Rhizomes present; culms but little compressed; spikelets set obliquely on the appressed pedicels; panicles open; spikelets 3.4 to 3.8 mm. long (rarely shorter); culms 50 to 100 cm. tall; blades elongate, pilose above near base . . . . *P. anceps*
1b. Rhizomes wanting; culms strongly compressed with keeled sheaths; spikelets not obliquely disposed.
  Ligule ciliate; basal leaves half as long as the culm or more; panicle much exceeding the upper leaves . . . . *P. longifolium*
  Ligule erose or lacerate, not ciliate; basal leaves in short tufts, the upper usually nearly equaling the terminal panicle.
    Fruit stipitate; spikelets 2.5 to 2.8 mm. long, conspicuously secund . . . . *P. stipitatum*
    Fruit not stipitate, spikelets not conspicuously secund, spikelets 1.8 to 2.2 mm. long . . . . *P. agrostoides*

(III) LAXA: *(Panicum)*
  Spikelets in more or less secund clusters, 2.2 to 2.4 mm. long, at maturity about twice as thick as wide, short-pediceled, 5-nerved; palea of sterile floret becoming enlarged and indurate, expanding the spikelet; panicle loose, open, spreading or drooping; culms 20 to 60 cm. tall . . . . *P. hians*

(IV) OBTUSA: *(Panicum)*
  Plant with long stolons; panicles narrow, the few appressed branches densely flowered; spikelets secund, 3.0 to 3.8 cm. long . . . . *P. obtusum*

Paspalum:
  Spikelets planoconvex, usually obtuse, subsessile, solitary or in pairs, in 2 rows on one side of a narrow or dilated rachis, the back of the fertile lemma toward it; first glume usually wanting; second glume and sterile lemma commonly about equal, the former rarely wanting; fertile lemma usually obtuse, chartaceous-indurate, the margins inrolled.

1a. Rachis foliaceous, broad and winged; racemes 2 to 4; spikelets solitary; plants glabrous, olive green, creeping, freely branching . . . . *P. dissectum*
1b. Rachis not foliaceous nor winged; racemes 1 to many; first glume normally wanting.
  2a. Racemes terminal and axillary, the axillary sometimes hidden in the sheaths; terminal inflorescence of 1 to 3 racemes.
    3a. Foliage, except margins, glabrous as a whole or nearly so; spikelets mostly 2 mm. long, rounded at summit . . . . *P. ciliatifolium*
    3b. Foliage conspicuously pubescent (or sparsely so in *P. pubescens*), culms erect or nearly so.
      4a. Blades from sparsely to rather densely pilose, rather thin, pilose on both surfaces . . . . *P. pubescens*
      4b. Blades puberulent on both surfaces with long hairs intermixed or the lower surface nearly or quite glabrous except for a few long hairs along midrib and margin . . . . *P. stramineum*

2b. Racemes terminal on the primary culm or leafy branches, no truly axillary racemes.
    5a. Plants robust, 1 to 2 m. tall; culms erect or suberect, leafy throughout, glume and sterile lemma slightly inflated, wrinkled, green . . . . *P. floridanum*
    5b. Plants not robust, if more than 1 m. tall, culms relatively slender.
        Spikelets solitary, orbicular . . . . *P. circulare*
        Spikelets elliptic, turgidly planoconvex; culms decumbent at base, rather stout . . . . *P. pubiflorum*

Phalaris:

Spikelets laterally compressed with 1 terminal perfect floret and 2 sterile lemmas below, the rachilla disarticulating above the glumes; the usually inconspicuous sterile lemmas falling closely appressed to the fertile floret; glumes equal, boat-shaped, about 5 mm. long, narrow, acute; the keel scabrous, very narrowly winged; sterile lemmas reduced to 2 small, usually minute scales; fertile lemma lanceolate, 4 mm. long, coriaceous, shorter than the glumes, enclosing the faintly 2-nerved palea; culms erect, 60 to 150 cm. tall, with creeping rhizomes . . . . *P. arundinacea*

Phleum:

Spikelets 1-flowered, laterally compressed, disarticulating above the glumes; glumes equal, membranaceous, keeled, abruptly mucronate or awned or gradually acute; lemma shorter than the glumes, hyaline, broadly truncate, 3- to 5-nerved; palea narrow, nearly as long as the lemma.
Panicle cylindric, several times longer than wide . . . . *P. pratense* (exotic)
Panicle ovoid or oblong, usually not more than twice as long as wide . . . . *P. alpinum*

Phragmites:

Spikelets several-flowered, the rachilla clothed with long silky hairs, disarticulating above the glumes and at the base of each segment between the florets, the lowest floret staminate or neuter; glumes 3-nerved, or the upper 5-nerved, lanceolate, acute, unequal, the first about half as long as the upper, the second shorter than the florets; lemmas narrow, long-acuminate, glabrous, 3-nerved, the florets successively smaller; palea much shorter than the lemma; florets exceeded by the hairs of the rachilla; tall robust culms with creeping rhizomes. Wetlands, pond margins . . . . *P. communis*

Poa:

Spikelets 2- to several-flowered, rachilla disarticulating above the glumes and between the florets, the uppermost floret reduced or rudimentary; glumes acute, keeled, somewhat unequal, the first usually 1-nerved, the second usually 3-nerved; lemmas somewhat keeled, acute or acutish, rarely obtuse, awnless, membranaceous, 5-nerved (intermediate nerves rarely obsolete), nerves sometimes pubescent; the callus or base of the lemma in many species with scant to copious cottony, weblike hairs.

Key to taxonomic subdivisions of *Poa* genus:

1a. Spikelets little compressed, narrow, much longer than wide, lemmas convex on the back, keels obscure, marginal and intermediate nerves usually faint; lemmas crisp-puberulent on back toward base; bunchgrasses . . . . (V) SCABRELLAE
1b. Spikelets distinctly compressed; the glumes and lemmas keeled.
    2a. Creeping rhizomes present . . . . (I) PRATENSES
    2b. Creeping rhizomes wanting.
        Lemmas webbed at base . . . . (II) PALUSTRES
        Lemmas not webbed at base.
            Lemmas pubescent on the keel or marginal nerves or both, sometimes on the internerves . . . . (IV) ALPINAE
            Lemmas glabrous . . . . (III) HOMALOPOAE

(I) PRATENSES: *(Poa)*
1a. Culms strongly flattened, 2-edged; rhizomatous . . . . *P. compressa* (exotic)
1b. Culms not strongly flattened or 2-edged; rhizomatous.

2a. Internerves glabrous, keel and marginal nerves pubescent; panicle pyramidal or oblong-pyramidal, open, the lowermost branches usually in a whorl of 5; lemmas copiously webbed at base . . . . *P. pratensis* (exotic)
2b. Internerves pubescent near base, keel and marginal nerves pubescent; panicle narrow or moderately open; branches ascending or appressed.
3a. First glume 2.5 to 3.0 mm. long, 1-nerved; first floret about 3 mm. long; spikelets rather thick . . . . *P. arida*
3b. First glume 4 to 5 mm. long, 3-nerved; first floret 5 mm. long; panicle usually in whorls of 3, narrow but open; spikelets mostly shining . . . . *P. glaucifolia*

(II) PALUSTRES: *(Poa)*
1a. Lemmas glabrous, or the keel sometimes pubescent.
2a. Sheaths retrorsely scabrous; culms decumbent; keel of lemma glabrous or slightly pubescent, web at base of lemma conspicuous . . . . *P. trivialis* (exotic)
2b. Sheaths glabrous; panicle very open, the few branches slender, naked below, spreading or drooping, webbed at base.
Lemmas villous on the keel; panicle branches mostly in fours or fives . . . . . . *P. alsodes*
Lemmas glabrous on the keel; panicle branches mostly in twos or threes.
Lemmas obtuse. . . . . *P. languida*
Lemmas acute. . . . . *P. saltuensis*
1b. Lemmas pubescent on keel and marginal nerves.
3a. Lower panicle branches distinctly reflexed at maturity, in whorls of 3 to 6; lemma webbed at base . . . . *P. sylvestris*
3b. Lower panicle branches not reflexed, broadly pyramidal, usually nodding.
4a. Intermediate nerves of lemma distinct . . . . *P. wolfii*
4b. Intermediate nerves of lemma obscure.
5a. Lower panicle branches in pairs, elongate, capillary, bearing few spikelets near the ends; culms solitary or in small tufts; bog plant. . . . . *P. paludigena*
5b. Lower panicle branches often more than 2, if only 2 not capillary and elongate.
Glumes narrow, acuminate, about as long as the first lemma; ligule very short . . . . *P. nemoralis* (exotic)
Glumes lanceolate, acute, shorter than the first lemma; ligules rather prominent, those of culm leaves 1 to 3 mm. or more long.
Culms decumbent at purplish base; panicle 10 to 30 cm. long, large and open . . . . *P. palustris*

(III) HOMALOPOAE: *(Poa)*
Culms erect from green or tawny base; panicle mostly less than 10 cm. long. . . . . . *P. interior*
Spikelets 4 to 6 mm. long, 2- to 4-flowered; lemmas distinctly 5-nerved; panicles with slender spreading branches in whorls of 5; culms as much as 1 m. tall; forest plant . . . . *P. chaixii*

(IV) ALPINAE: *(Poa)*
Panicle branches slender, the capillary flexuous branches spreading, bearing a few spikelets near the ends; spikelets 4- to 6-flowered, about 6 mm. long . . . . *P. autumnalis*
Panicle branches not long and spreading, erect, loose; culms compressed, stiff, 10 to 30 cm. tall . . . . *P. glauca*

(V) SCABRELLAE: *(Poa)*
Panicle contracted, branches appressed, somewhat spreading in anthesis; spikelets 3- to 5-flowered; culms 50 to 120 cm. tall; ligule 2 to 5 mm. long . . . . *P. canbyi*

Puccinellia:

Spikelets several-flowered, usually terete or subterete, rachilla disarticulating above the glumes and between the florets; glumes unequal, shorter than the first lemma, obtuse or acute, rather firm, often scarious at tip, the first 1-nerved or sometimes 3-nerved, the second 3-nerved; lemmas usually firm, rounded on the back, obtuse or acute, usually scarious and often erose at tip, glabrous or puberulent toward base, rarely pubescent on nerves, 5-nerved, indistinct; palea about as long as lemma or somewhat shorter.

1a. Lemmas broad, obtuse or truncate, not narrowed above, rather thin, 1.5 to 2.0 mm. long, lower panicle branches usually reflexed . . . . *P. distans* (exotic)

1b. Lemmas narrow, narrowed into an obtuse apex; panicle branches spreading but usually not reflexed . . . . *P. airoides*

Schizachne:

Spikelets several-flowered, disarticulating above the glumes and between the florets, rachilla glabrous; glumes unequal, 3- and 5-nerved, purplish, less than half as long as the spikelet; lemmas about 1 cm. long, lanceolate, strongly 7-nerved, long-pilose on the callus, awned from just below the teeth of the prominently bifid apex, awn as long as the lemma or longer; palea softly pubescent; culms erect from a loosely tufted decumbent base; panicle somewhat drooping, branches single or in pairs, bearing 1 or 2 spikelets that are 2.0 to 2.5 cm. long . . . . *S. purpurascens*

Scolochloa:

Spikelets 3- or 4-flowered, rachilla disarticulating above the glumes and between the florets; glumes nearly equal, somewhat scarious and lacerate at summit, the first 3-nerved, the second 5-nerved, about as long as the first lemma; lemmas firm, rounded on the back, villous on the callus, 7-nerved, the nerves rather faint and unequal, extending into a scarious lacerate apex; palea narrow, flat, about as long as the lemma; spikelet about 8 mm. long; panicle 15 to 20 cm. long, loose, branches fascicled, ascending; culms erect, 1.0 to 1.5 m. tall with creeping rhizomes; wet places . . . . *S. festucacea*

Setaria:

Spikelets subtended by numerous bristles, these 1 to 6 times as long as the spikelet; spikelets 2 to 3 mm. long, awnless; first glume broad, usually less than half the length of the spikelet, 3- to 5-nerved; second glume and sterile lemma equal, or the glume shorter, several-nerved; fertile lemma coriaceous-indurate; base of plant slender, wiry; culms with short knotty rhizomes . . . . *S. geniculata*

Sitanion:

Spikelets 2- to few-flowered, the uppermost floret reduced, usually 2 at each node of a disarticulating rachis, the rachis breaking at the base of each joint; glumes narrow or setaceous, 1- to 3-nerved, the nerves prominent, extending into 1 to several awns; lemmas firm, convex on back, nearly terete, 5-nerved, the nerves obscure, apex slightly 2-toothed, central nerve extending into a long, slender, finally spreading awn, sometimes short awns from lateral nerves; awns of glumes and lemmas 2 to 10 cm. long; culms rather stiff, 10 to 50 cm. tall . . . . . *S. hystrix*

Sorghastrum:

Spikelets in pairs, one nearly terete, sessile, and perfect, the other wanting, only a hairy pedicel present, 6 to 8 mm. long; glumes coriaceous, brown or yellowish, the first hirsute, edges inflexed over the second; sterile and fertile lemmas thin and hyaline, the latter extending into a once-geniculate awn 1.0 to 1.5 cm. long; panicle rather narrow and dense; culms 1.0 to 2.5 m. tall from short scaly rhizomes; blades elongate, flat, 5 to 10 mm. wide, scabrous, tapering to a narrow base . . . . *S. nutans*

Spartina:

Spikelets 1-flowered, much flattened laterally, sessile and usually closely imbricate on one side of a continuous rachis, disarticulating below the glumes; glumes keeled, 1-nerved, or the second with a second nerve on one side, acute or short-awned, the first shorter, the second often exceeding the lemma; lemma firm, keeled, the lateral nerves obscure, narrowed to a rather obtuse point; palea 2-nerved, keeled, and flattened, rhizomatous.

Blades usually more than 5 mm. wide, tip involute; plants robust, more than 1 m. tall . . . . *S. pectinata*

Blades less than 5 mm. wide, involute; plants mostly slender . . . . *S. patens*

Sphenopholis:

Spikelets 2- or 3-flowered, the pedicel disarticulating below the glumes, rachilla produced beyond the upper floret as a slender bristle; glumes unlike in shape, the first narrow, usually acute 1-nerved, the second broadly obovate, 3- to 5-nerved, the nerves sometimes obscure, mostly somewhat coriaceous, the margin scarious; lemmas firm, scarcely nerved, awnless, or rarely with an awn from just below the apex, the first a little shorter or a little longer than the second glume; palea hyaline, exposed; panicles narrow and shining.

Panicle dense, usually spikelike, erect or nearly so; second glume subcucullate; lemmas rarely mucronate or with a short straight awn; culms 30 to 100 cm. tall . . . . *S. obtusata*
Panicle not dense, lax, nodding, from very slender to many-flowered, but not spikelike; spikelets awnless.
Lemmas glabrous; panicle many-flowered . . . . *S. intermedia*
Lemmas scabrous; panicle relatively few-flowered; blades not more than 10 cm. long . . . . *S. nitida*

Sporobolus:

Spikelets 1-flowered, rachilla disarticulating above the glumes; glumes 1-nerved, usually unequal, the second often as long as the spikelet; lemma membranaceous, 1-nerved, awnless; palea usually prominent and as long as the lemma or longer; caryopsis free from the lemma and palea, falling readily at maturity.

1a. Spikelets mostly 3 to 7 mm. long.
2a. Second glume shorter than the lemma; panicle contracted, more or less included in the sheath.
Lemma glabrous, the palea not exceeding it; upper sheath inflated . . . . *S. asper*
Lemma pubescent, the palea exceeding it . . . . *S. clandestinus*
2b. Second glume about as long as the lemma; panicle open; culms forming a dense bunch . . . . *S. heterolepis*
1b. Spikelets 1.0 to 2.5 mm. long.
Sheaths with a conspicuous tuft of white hairs at summit; panicle partially exserted . . . . *S. cryptandrus*
Sheaths naked or nearly so at the summit; panicle open; culms forming bunches . . . . *S. airoides*

Stipa:

Spikelets 1-flowered, disarticulating above the glumes, the articulation oblique, leaving a bearded sharp-pointed callus attached to the base of the floret; glumes membranaceous, often papery, acute, acuminate, or even aristate, usually long and narrow; lemma narrow, terete, firm or indurate, strongly convolute, rarely the margins only meeting, terminating in a prominent awn, the junction of the body and awn evident, the awn twisted below, geniculate; palea enclosed in the convolute lemma.

1a. Lemma more than 7 mm. long (often 1 to 2 cm.), glabrous or sparsely pubescent above the callus, mostly cylindric.
2a. Mature lemma pale or finally brownish, sparsely pubescent to summit, mostly more than 1 cm. long; awn 10 to 15 cm. long; culms 30 to 60 cm. tall. . . . . . *S. comata*
2b. Mature lemmas dark.
Lemma 8 to 10 mm. long, glabrous above the base; awn 4.5 to 6.0 cm. long . . *S. avenacea*
Lemma 12 to 25 mm. long, more or less pubescent above the callus; awn 12 to 20 cm. long; culms about 1 m. tall . . . . *S. spartea*
1b. Lemma 5 to 6 mm. long, distinctly pubescent on the upper part; awn 2 to 3 cm. long; panicle narrow, greenish or tawny . . . . *S. viridula*

Tridens:

Spikelets several-flowered, rachilla disarticulating above the glumes and between the florets; glumes membranaceous, often thin, nearly equal in length, the first sometimes narrower, 1-nerved, the second rarely 3- to 5-nerved, acute to acuminate; lemmas broad, rounded on the back, the apex from minutely emarginate or toothed to deeply and obtusely 2-lobed, 3-nerved, the lateral nerves near the margin, the midnerve usually excurrent between the lobes as a minute point or as a short awn, the lateral nerves often excurrent as minute points, all the nerves pubescent below, the lateral nerves sometimes conspicuously so throughout; palea broad, the 2 nerves near the margin sometimes villous; grain concavo-convex.

1a. Panicle open or loose, not dense or spikelike.
  Panicle erect; branches stiffly spreading; pulvini hairy, extending entirely around base of branches . . . . *T. chapmani*
  Panicle drooping; pulvini confined to upper surface at the base of the branches. . *T. flavus*
1b. Panicle slender, spikelike.
  Panicle 10 to 30 cm. long, narrowed above, somewhat interrupted below but spikelets crowded as compared to *T. elongatus;* culms 100 to 150 cm. tall . . . *T. strictus*
  Panicle 10 to 25 cm. long, pale or purple-tinged, loosely flowered; branches rather distant, appressed; culms 40 to 80 cm. tall. *T. elongatus*

Tripsacum:

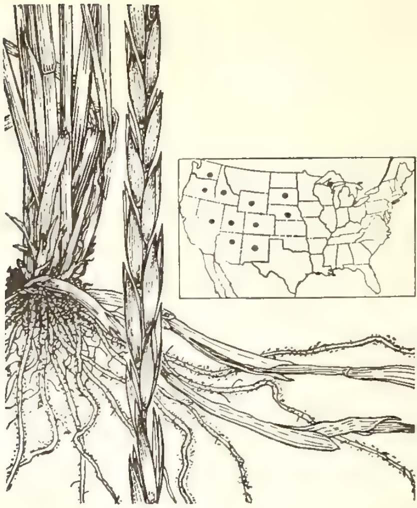
Spikelets unisexual; staminate spikelets 2-flowered, in pairs on one side of a continuous rachis, one sessile, the other sessile or pedicellate; pistillate spikelets solitary on opposite sides at each joint of the thick, hard articulate lower part of the same rachis, sunken in hollows in the joints, consisting of one perfect floret and a sterile lemma; first glume coriaceous, nearly infolding the spikelet, fitting into and closing the hollow of the rachis; second glume similar to the first but smaller, infolding the remainder of the spikelet; sterile lemma, fertile lemma, and palea very thin and hyaline; inflorescence 15 to 25 cm. long, the pistillate part one-fourth the entire length or less; terminal racemes 1 to 3; robust perennials; plants 2 to 3 m. tall with knotty rhizomes, blades 1 to 2 cm. wide . . . . *T. dactyloides*

Trisetum:

Spikelets usually 2-flowered, sometimes 3- to 5-flowered, rachilla prolonged behind the upper floret, usually villous; glumes somewhat unequal, acute, the second usually longer than the first floret; lemmas usually short-bearded at base, 2-toothed at apex, teeth often awned, bearing from the back below the cleft apex a straight and included or usually bent and exserted awn.
  Awn included within the glumes or wanting; panicle rather lax, nodding . . . . . . *T. melicoides*
  Awn exserted, geniculate; panicle dense, spikelike; plants densely tufted . . . . . . *T. spicatum*

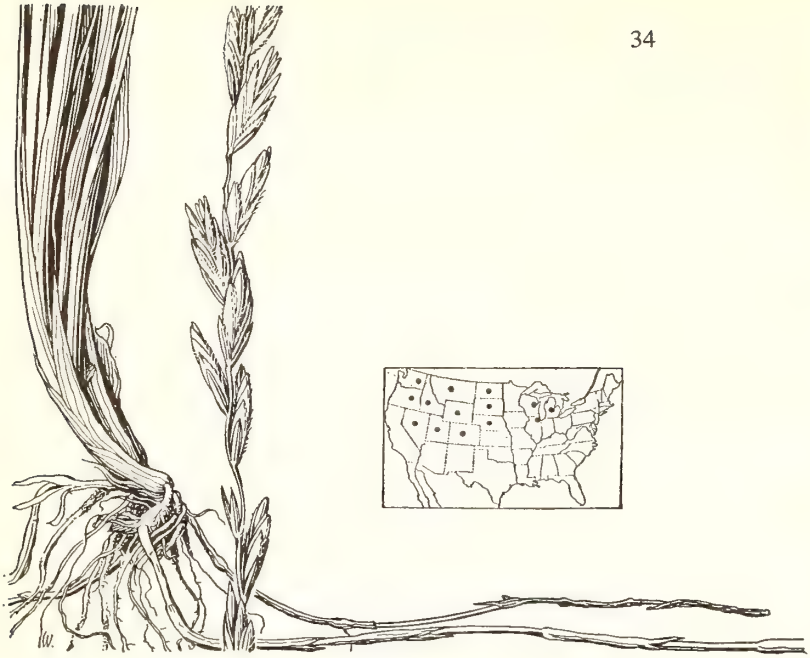
Uniola:

Spikelets 8- to 12-flowered, 2.0 to 3.5 cm. long, 1.0 to 1.5 cm. wide; the first lemma empty; rachilla disarticulating above the glumes and between the florets; glumes compressed-keeled, rigid, 3- to 7-nerved, acute or acuminate; lemmas lanceolate, strongly compressed-keeled, acute, about 1.0 cm. long, striate-nerved, the keel ciliate with soft ascending hairs, the callus pilose; palea shorter than the lemma, wing-keeled; panicle open drooping, 10 to 20 cm. long, branches bearing a few large, very flat spikelets; culms 1 to 1.4 m. tall with short rhizomes; blades flat, mostly 1 to 2 cm. wide . . . . *U. latifolia*



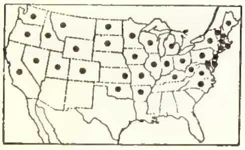
Agropyron pseudorepens, × 1. (Chase 5389, Colo.)

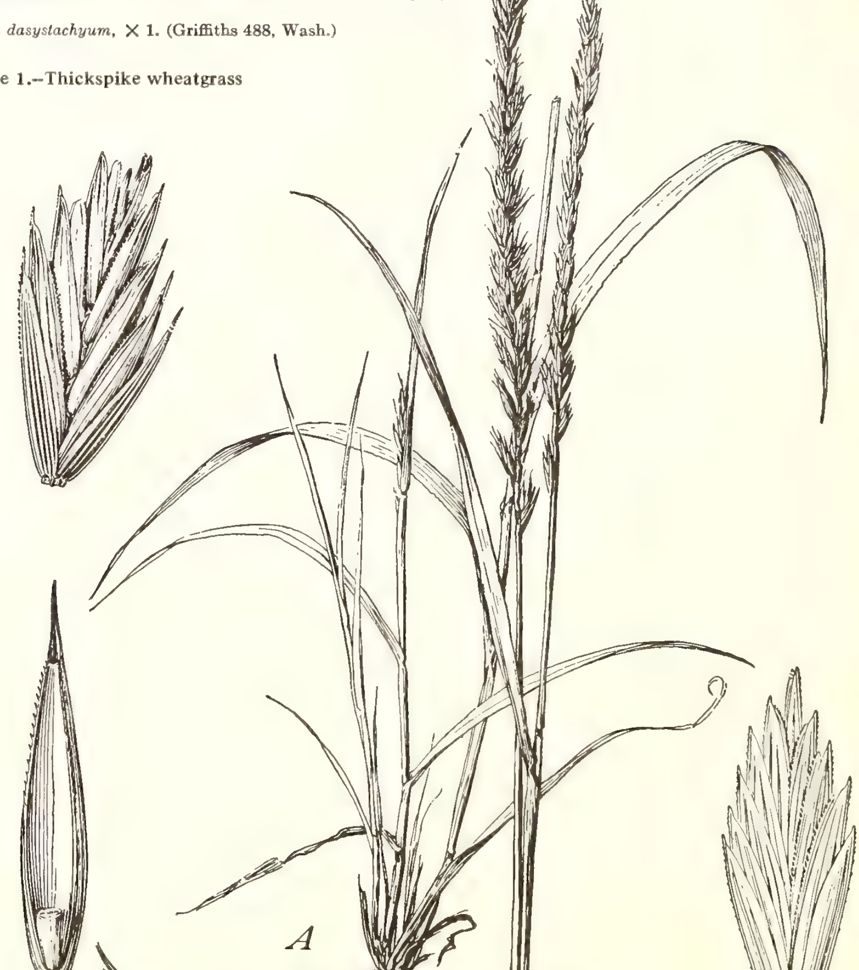
Figure 2.--False quackgrass



Agropyron dasystachyum, × 1. (Griffiths 488, Wash.)

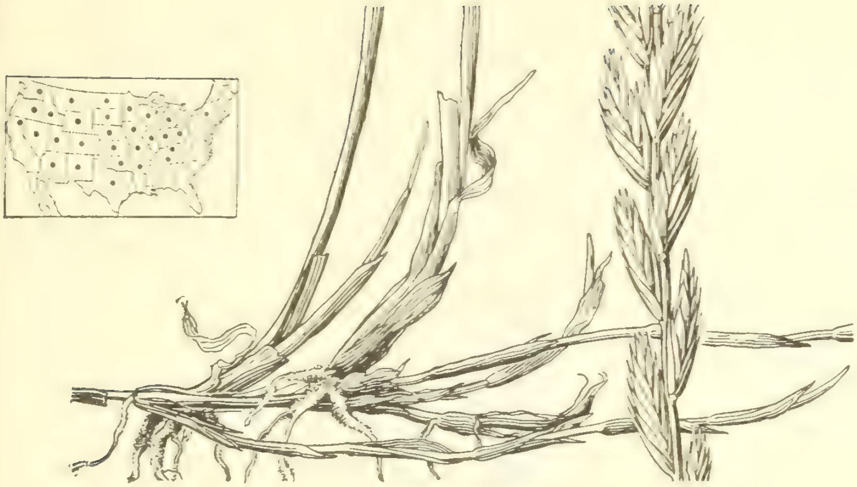
Figure 1.--Thickspike wheatgrass





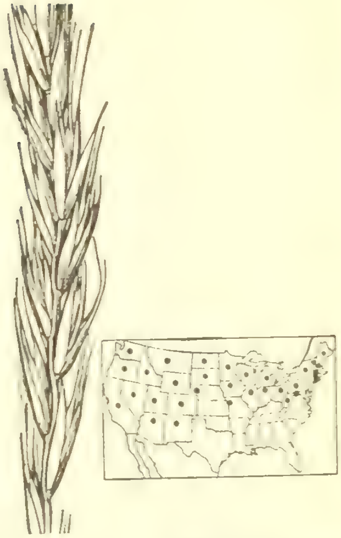
A, *Agropyron repens*. Plant, × ½; spikelet and floret, × 3. *B*, *A. pungens*, × 3. (Scribner, Maine.)

Figure 2a.--Quackgrass (exotic)



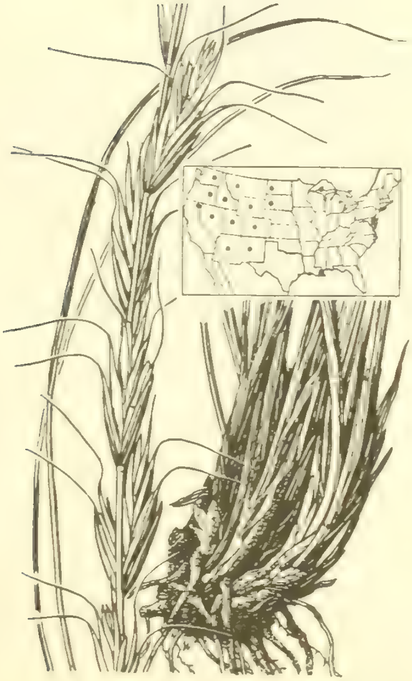
Agropyron smithii, × 1. (Nelson 3918, Wyo.)

Figure 3.–Western wheatgrass (Hitchcock)



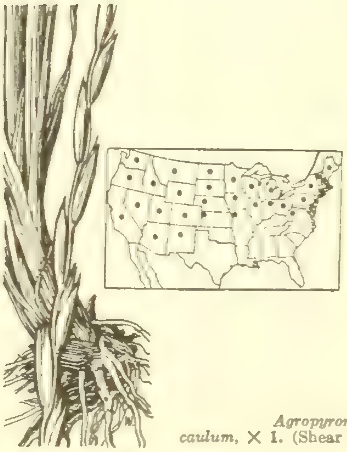
Agropyron subsecundum, × 1. (Shear 452, Mont.)

Figure 5.–Bearded wheatgrass



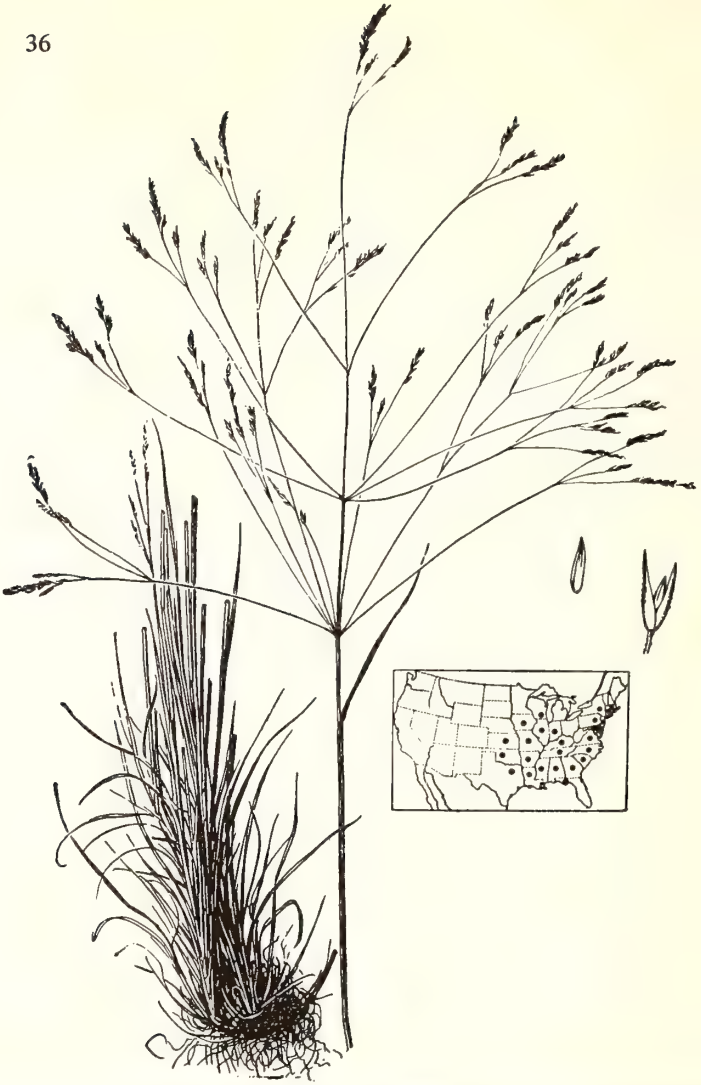
Agropyron spicatum, × 1. (Vasey, Wash.)

Figure 4.–Bearded bluebunch wheatgrass



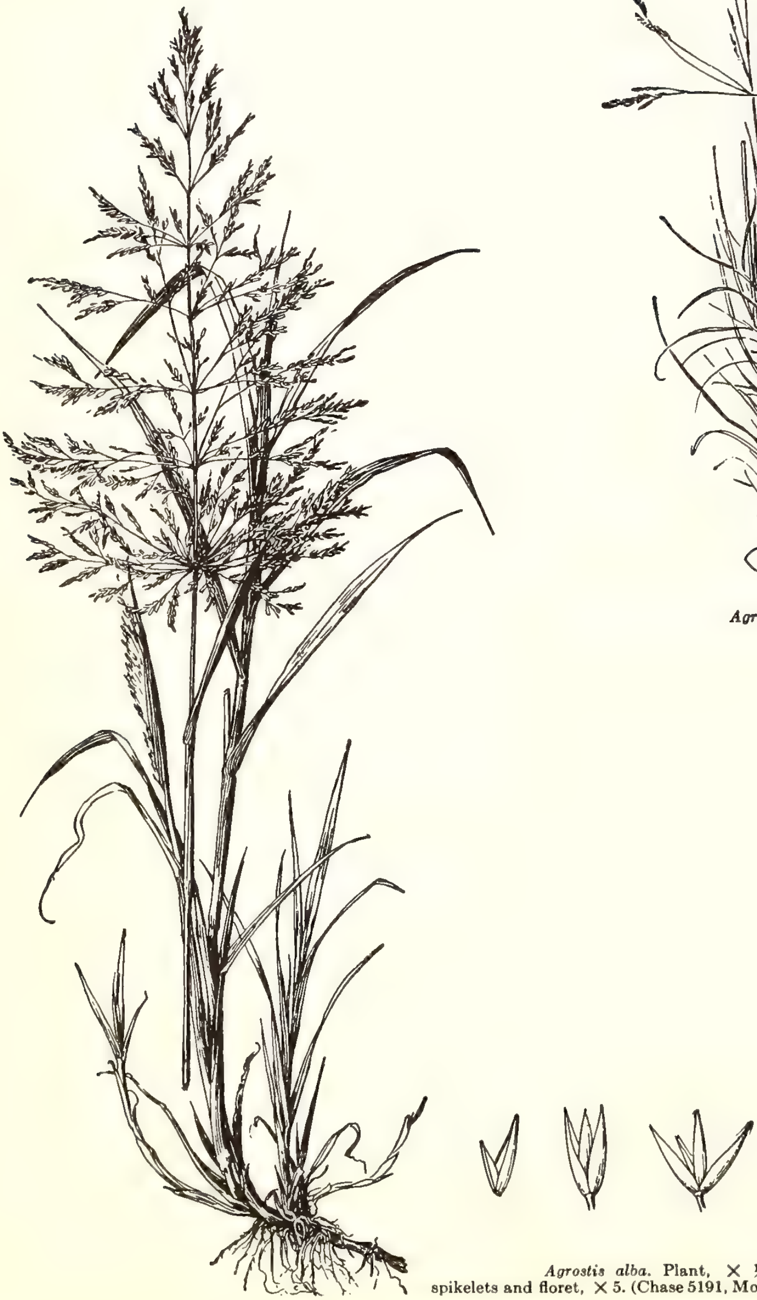
Agropyron trachycaulum, × 1. (Shear 404.)

Figure 6.–Slender wheatgrass (Hitchcock)



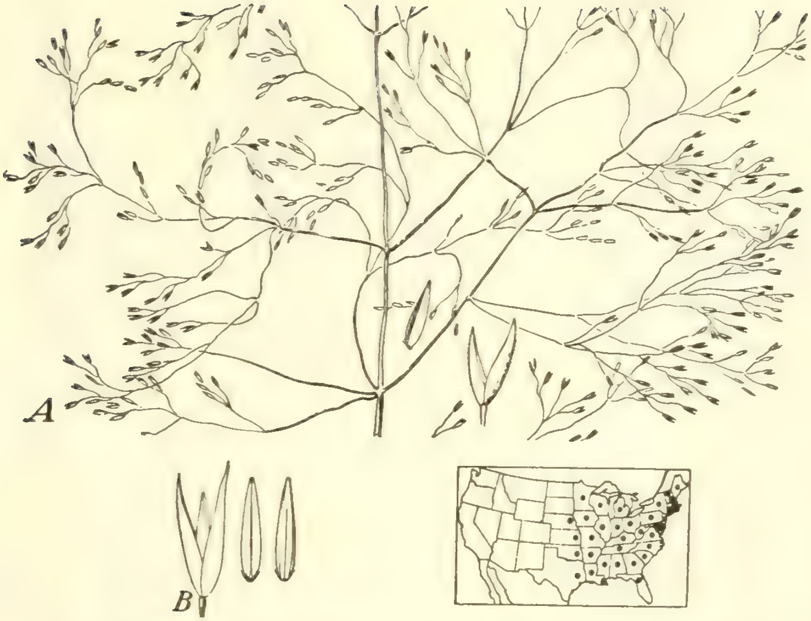
Agrostis hiemalis. Plant, × ½; glumes and floret, × 5. (Deam 6514, Ind.

Figure 7.–Winter bentgrass



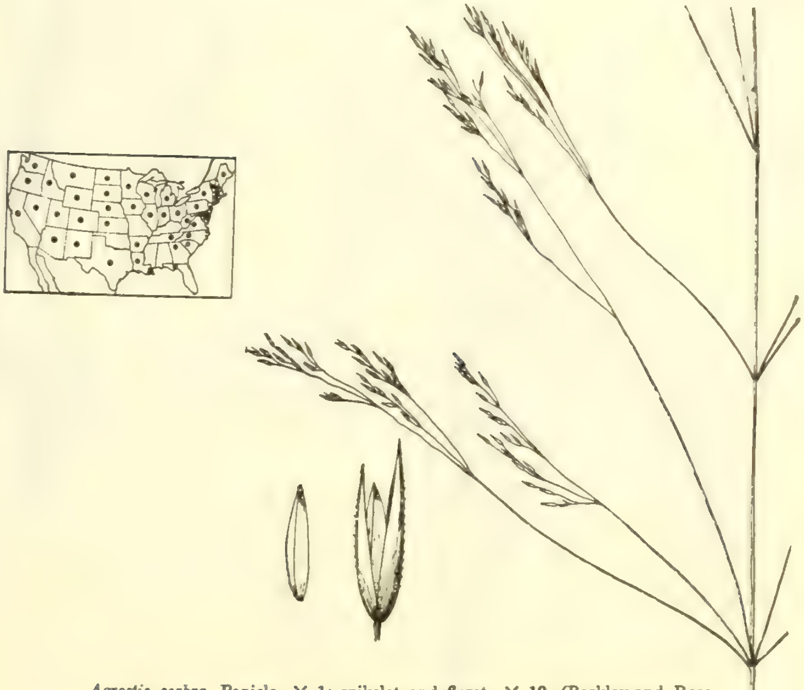
Agrostis alba. Plant, × ½; 2 spikelets and floret, × 5. (Chase 5191, Mont.)

Figure 7a.–Redtop (exotic)



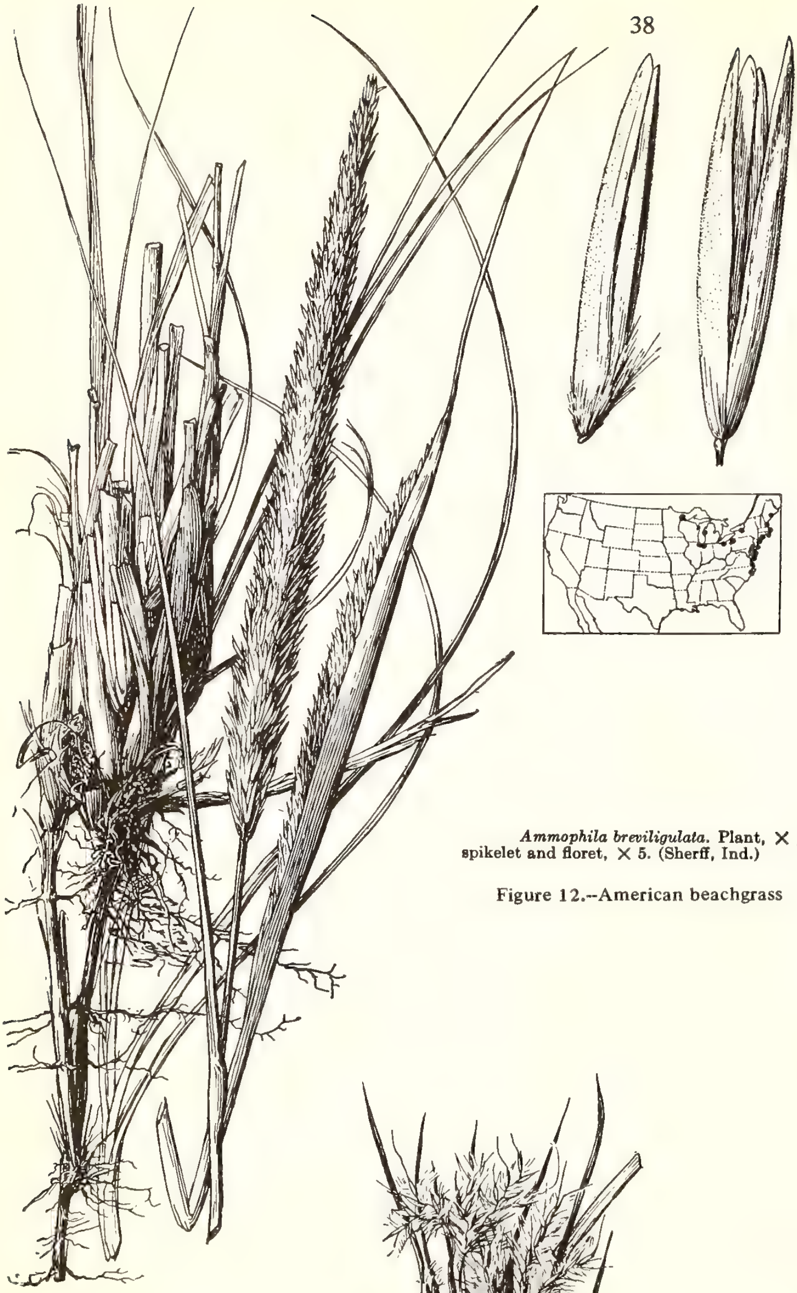
A, Agrostis perennans. Panicle, × 1; glumes and floret, × 5. (Millspaugh 53, W. Va.) *B, A. altissima.* Glumes and two views of floret, × 5. (A. Gray, N. J., in Trinius Herb.)

Figure 8.–Autumn bentgrass



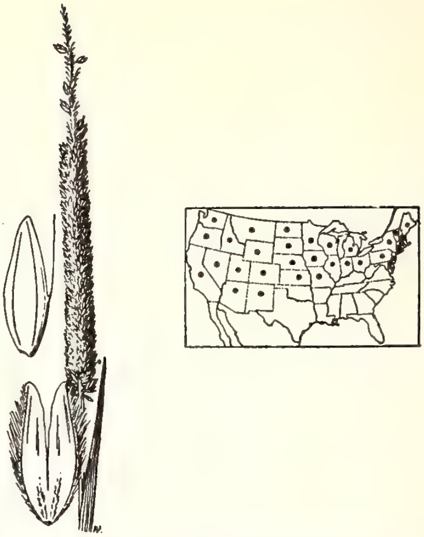
Agrostis scabra. Panicle, × 1; spikelet and floret, × 10. (Barkley and Rose 1881, Mont.)

Figure 9.–[No standard common name]



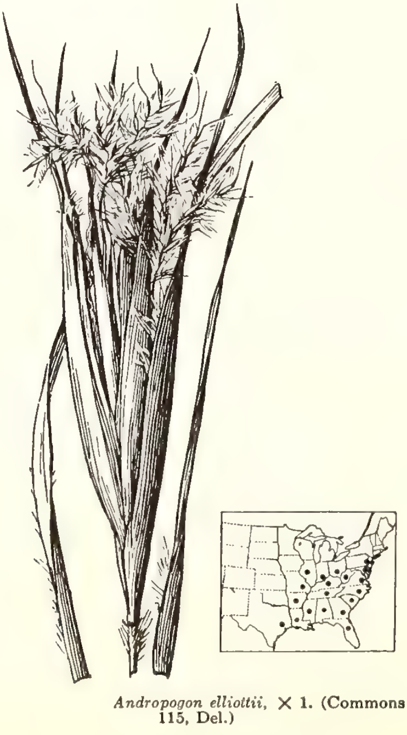
Ammophila breviligulata. Plant, × ½; spikelet and floret, × 5. (Sherff, Ind.)

Figure 12.--American beachgrass



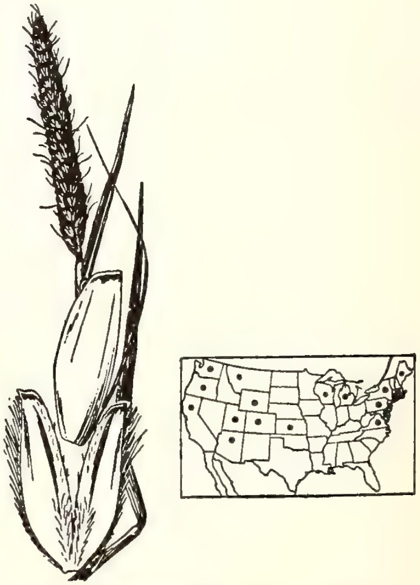
Alopecurus aequalis. Panicle, × 1; glumes and floret, × 10. (Fernald, Maine.)

Figure 10.--Shortawn foxtail



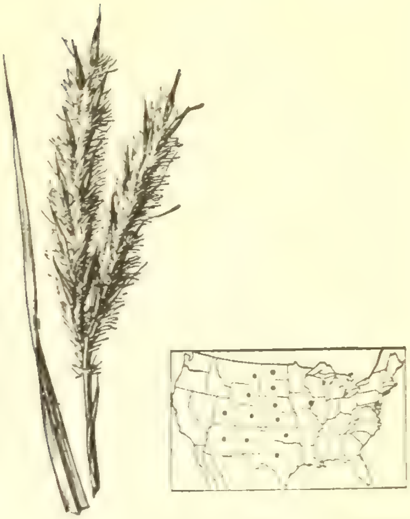
Andropogon elliottii, × 1. (Commons 115, Del.)

Figure 13.--Elliott bluestem



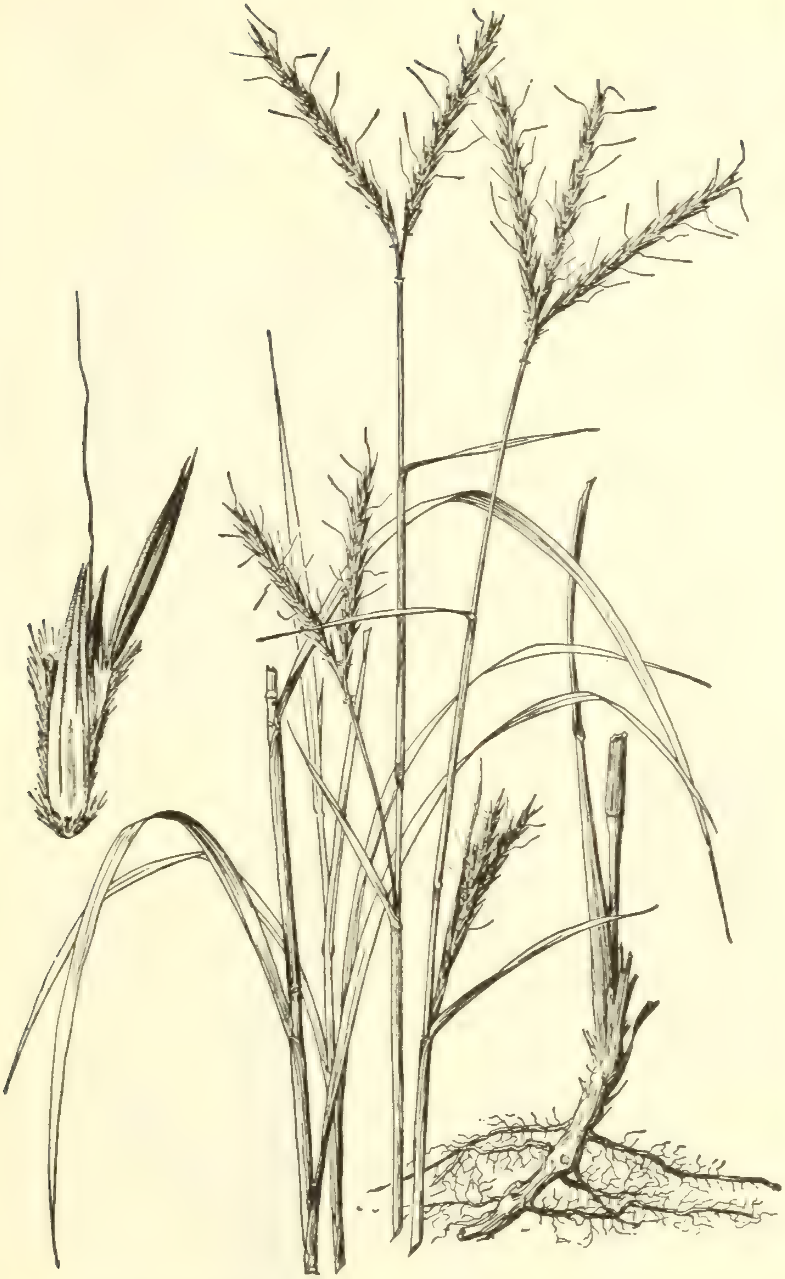
Alopecurus geniculatus. Panicle, × 1; glumes and floret, × 10. (Weatherby 3394, Mass.)

Figure 11.--Water foxtail



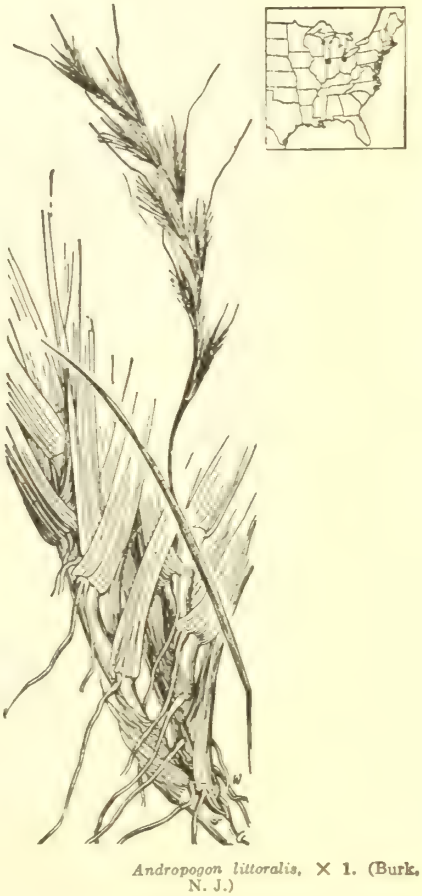
Andropogon hallii, × 1. (Hitchcock 584, Kans.)

Figure 15.–Sand bluestem



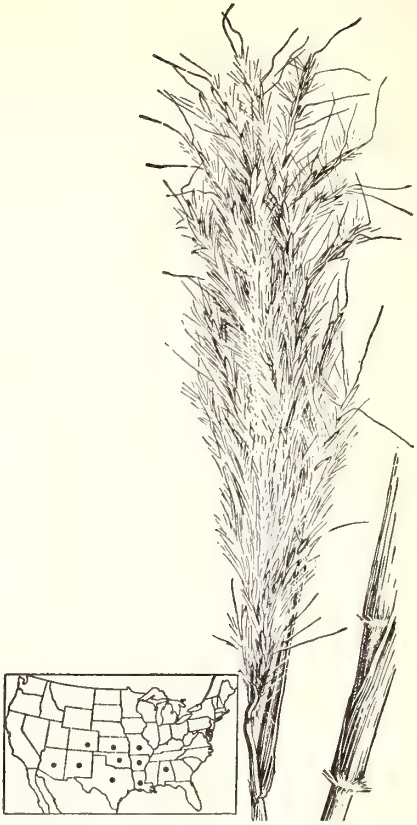
Andropogon gerardi. Plant, × ½; pair of spikelets, × 5. (Amer. Gr. Natl. Herb. 255, D. C.)

Figure 14.–Big bluestem (Hitchcock)



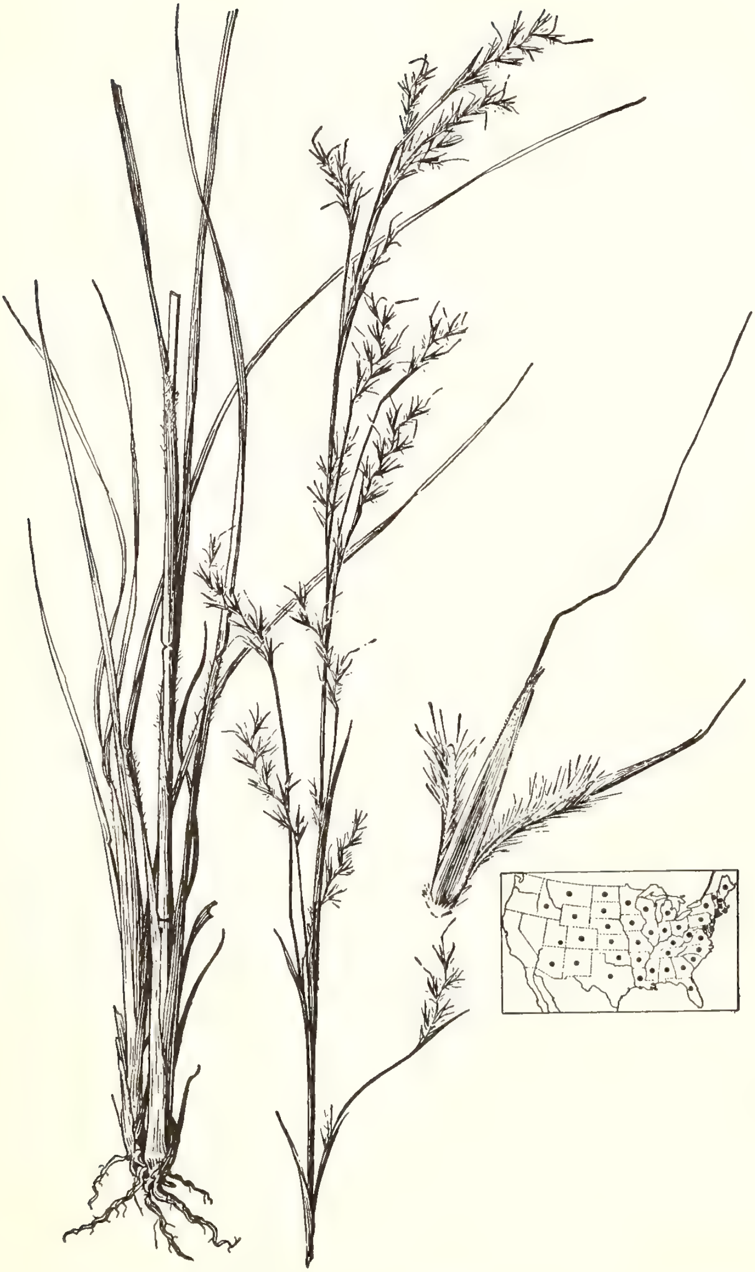
Andropogon littoralis, × 1. (Burk, N. J.)

Figure 16.–Seacoast bluestem



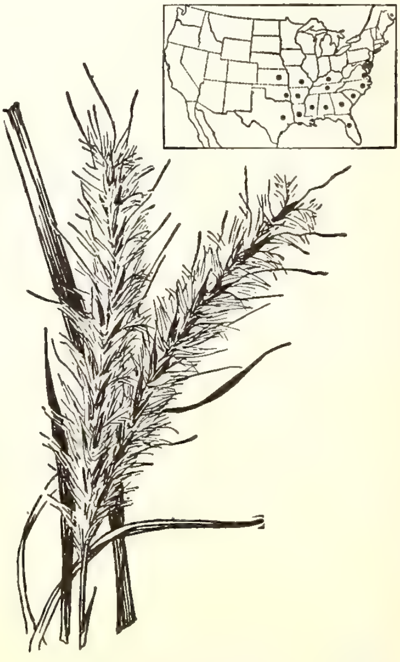
Andropogon saccharoides, × 1. (Hitchcock 5370, Tex.)

Figure 17.--Silver bluestem



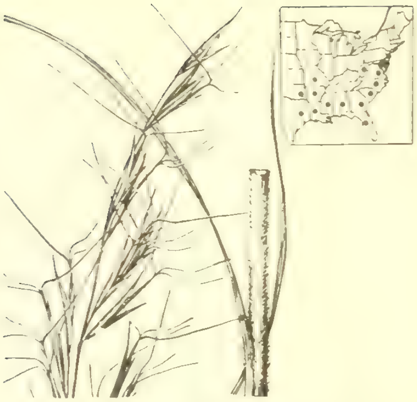
Andropogon scoparius. Plant, × ½; pair of spikelets, × 5. (Amer. Gr. Natl. Herb. 268, D. C.)

Figure 18.--Little bluestem



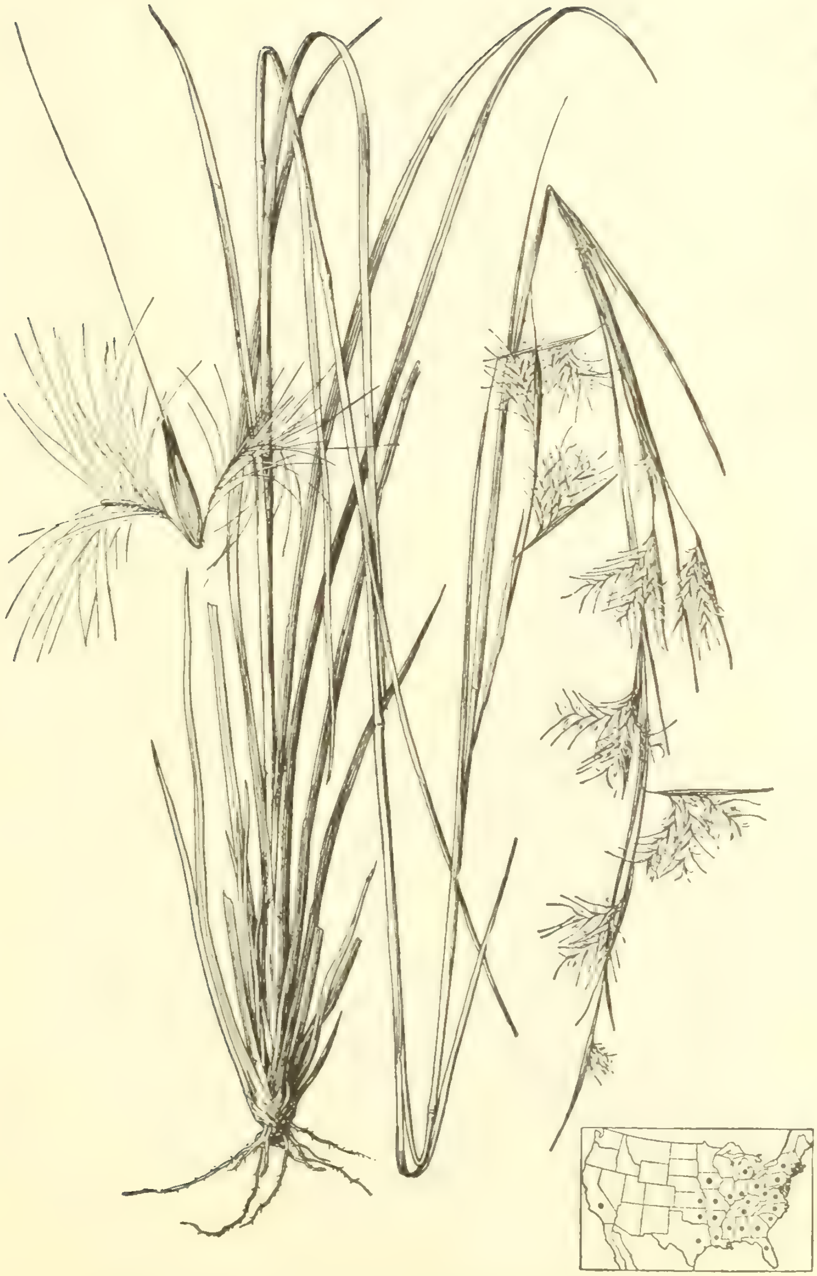
Andropogon ternarius, × 1. (Chase 4557, N. C.)

Figure 19.--[No standard common name]



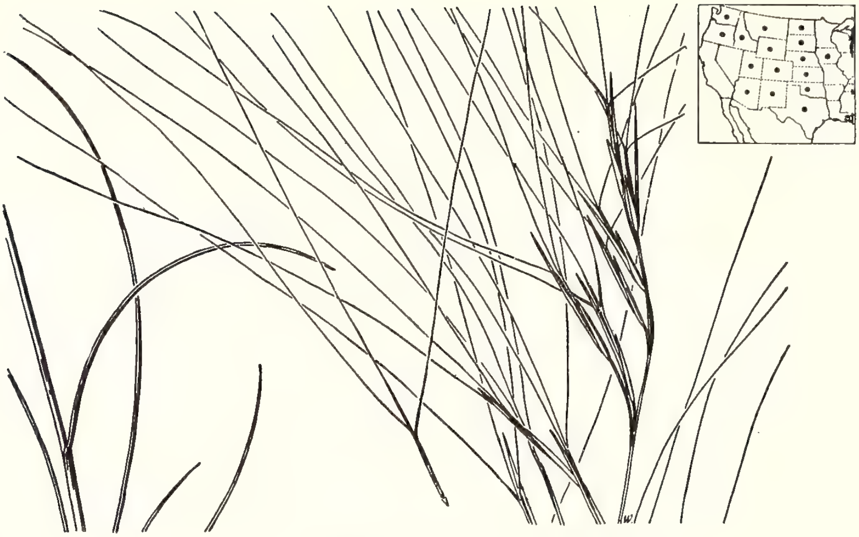
Aristida lanosa, × 1. (Canby, Md.)

Figure 21.--Woollysheath threeawn



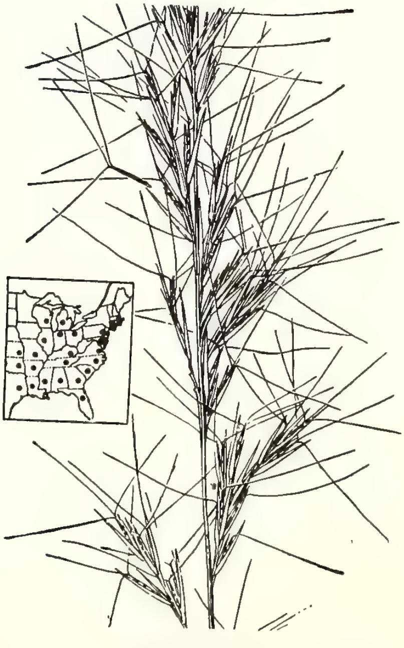
Andropogon virginicus. Plant, × ½; spikelet with rachis joint and pedicel, × 5. (Earle 4, Ala.)

Figure 20.--Broomsedge (Hitchcock)



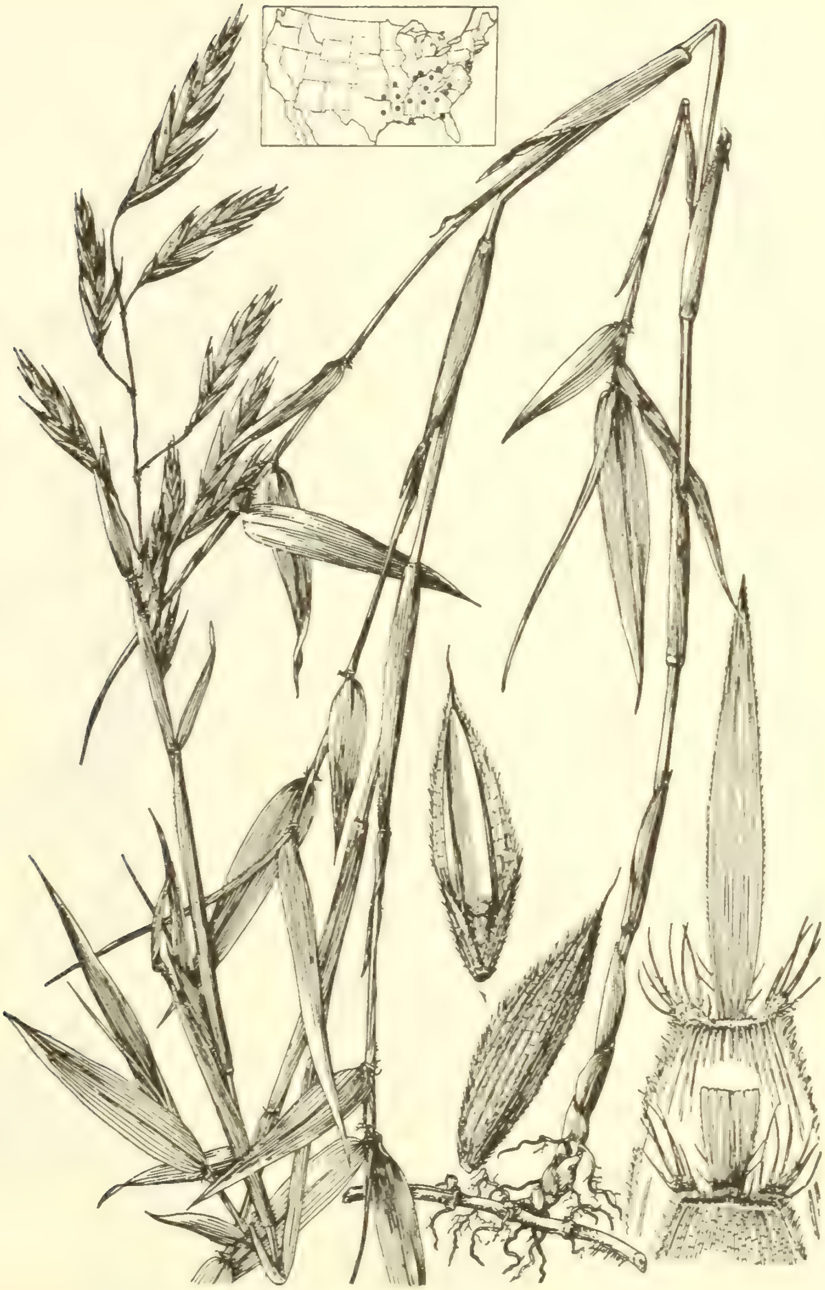
Aristida longiseta, × 1. (Thompson 63, Kans.)

Figure 22.--Red threeawn



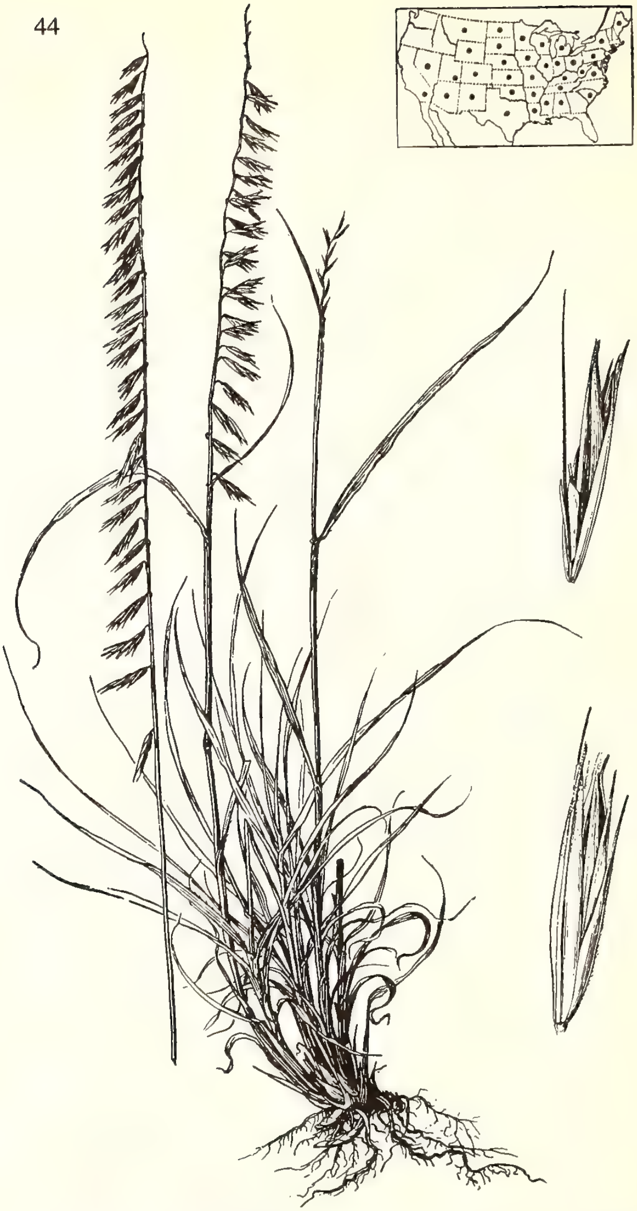
Aristida purpurascens, × 1. (Chase 4563, N. C.)

Figure 23.--Arrowfeather threeawn



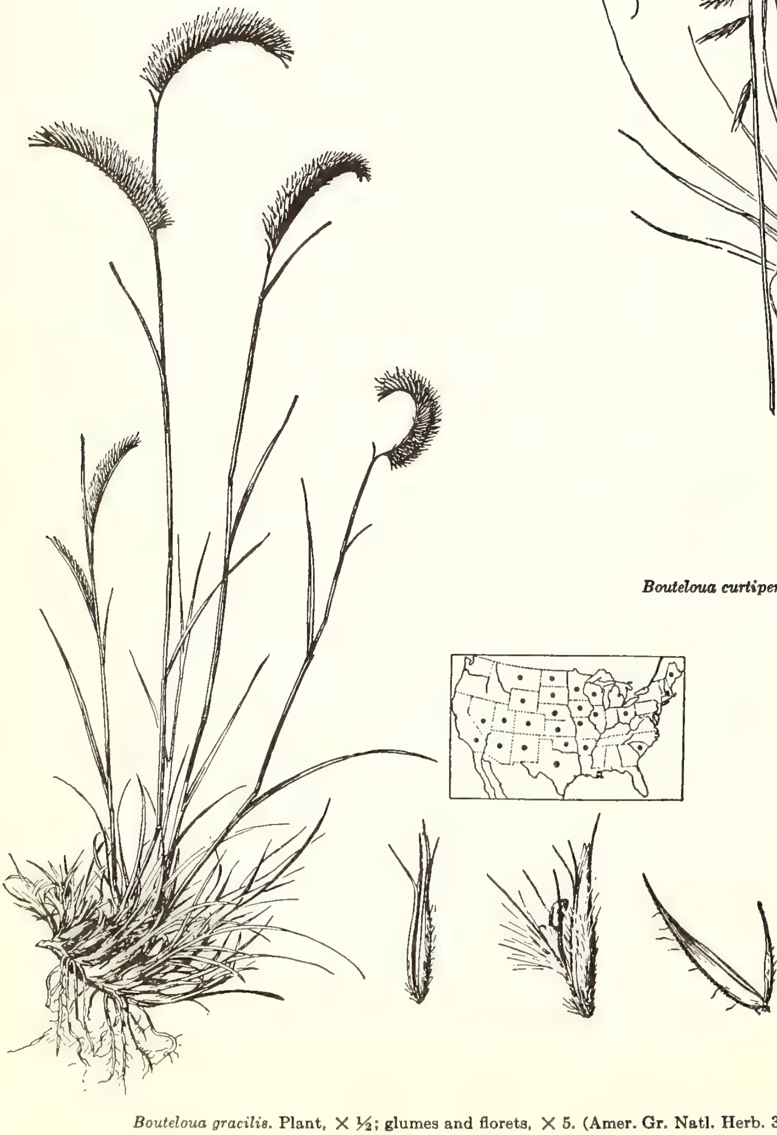
Arundinaria gigantea. Flowering shoot, × ½; summit of culm sheath, outer and inner face, showing auricles and ligule, and two views of floret, × 2. (Swallen 6717, Miss.)

Figure 24.–Giant cane



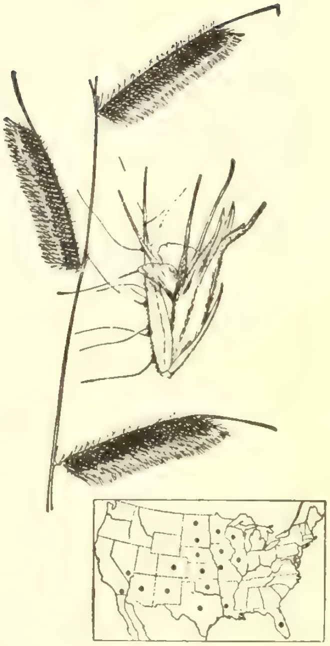
Bouteloua curtipendula. Plant, × ½; spikelet and florets, × 5. (Chase 5408, **Colo.**)

Figure 25.--Sideoats grama



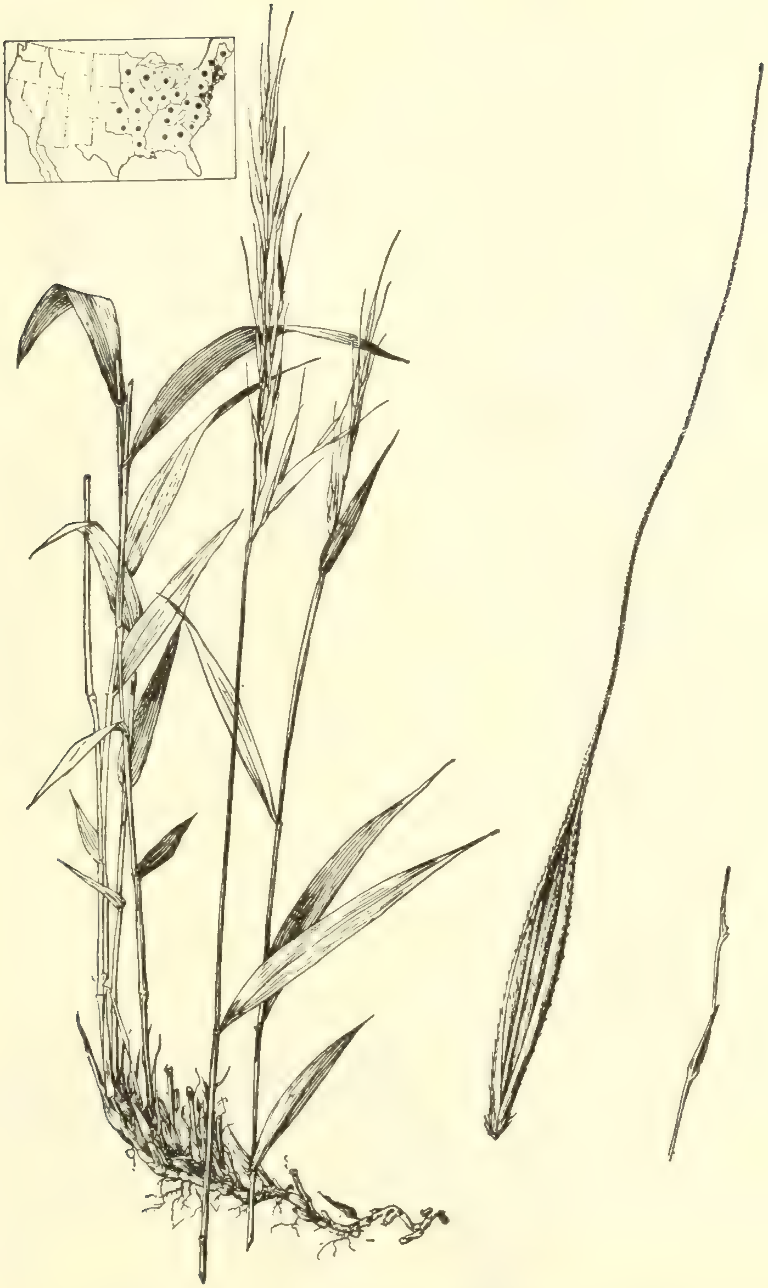
Bouteloua gracilis. Plant, × ½; glumes and florets, × 5. (Amer. Gr. Natl. Herb. 384, Nev.)

Figure 26.--Blue grama



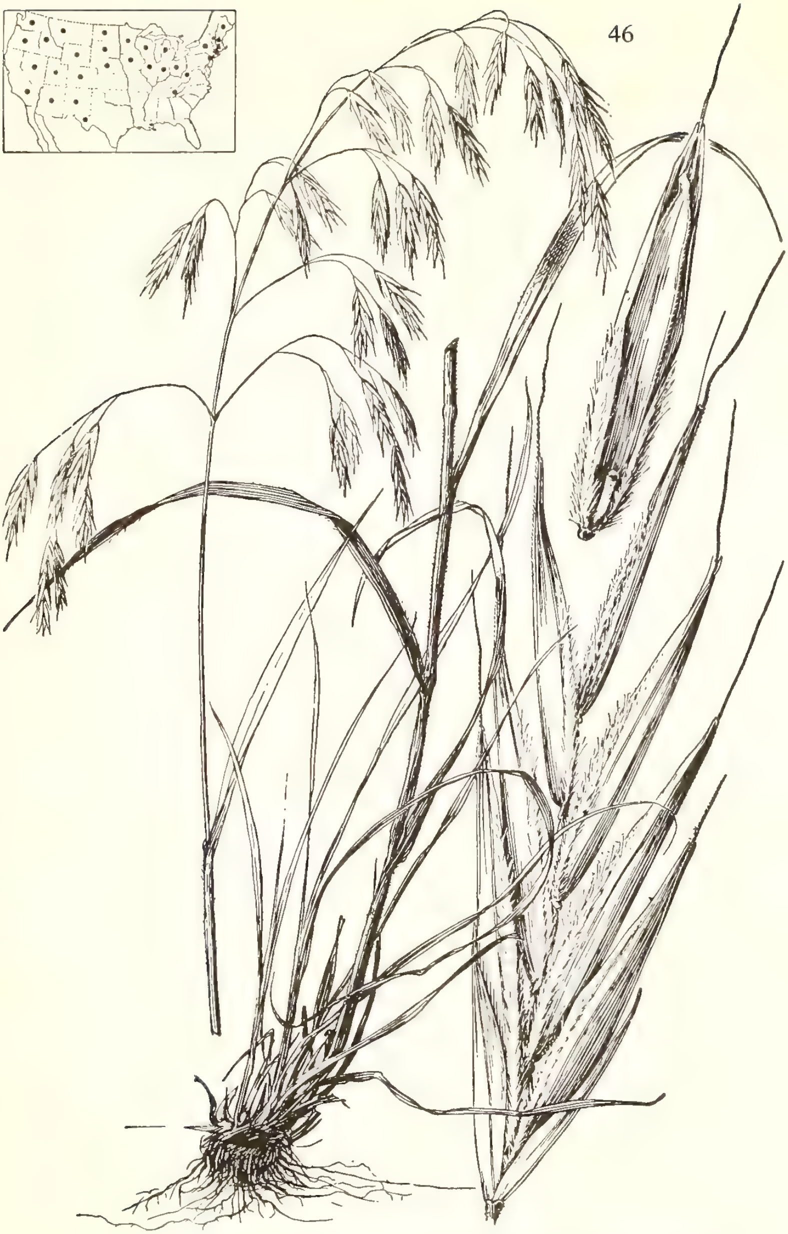
Bouteloua hirsuta. Panicle, × 1; spikelet, × 5. (Griffiths 3371, Ariz.)

Figure 27.--Hairy grama



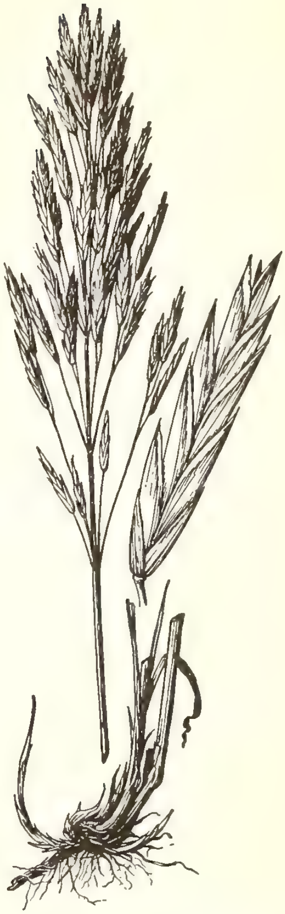
Brachyelytrum erectum. Plant, × ½; branchlet with glumes of two spikelets, and floret, × 5. (Bissell, Conn.)

Figure 28.--Bearded shorthusk



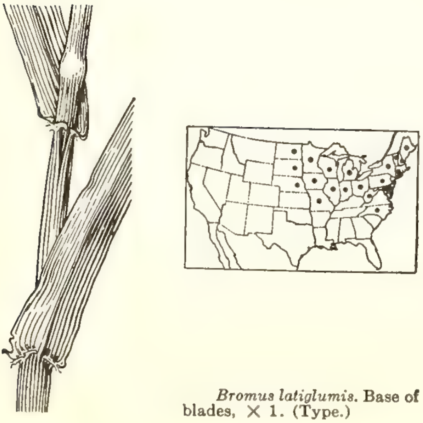
Bromus ciliatus. Plant, × ½; spikelet and floret, × 5. (Hitchcock, Vt.)

Figure 29.--Fringed brome



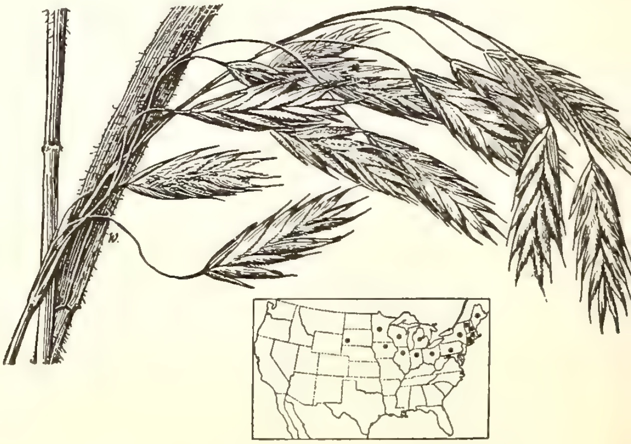
Bromus inermis. Plant, × ½; spikelet, × 2½. (Deam 11633, Ind.)

Figure 29a.--Smooth brome (exotic)



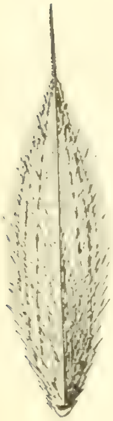
Bromus latiglumis. Base of blades, × 1. (Type.)

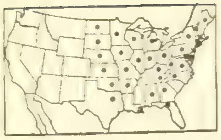
Figure 31.--Earleaf brome



Bromus kalmii, × 1. (Chase 1866½, Ind.)

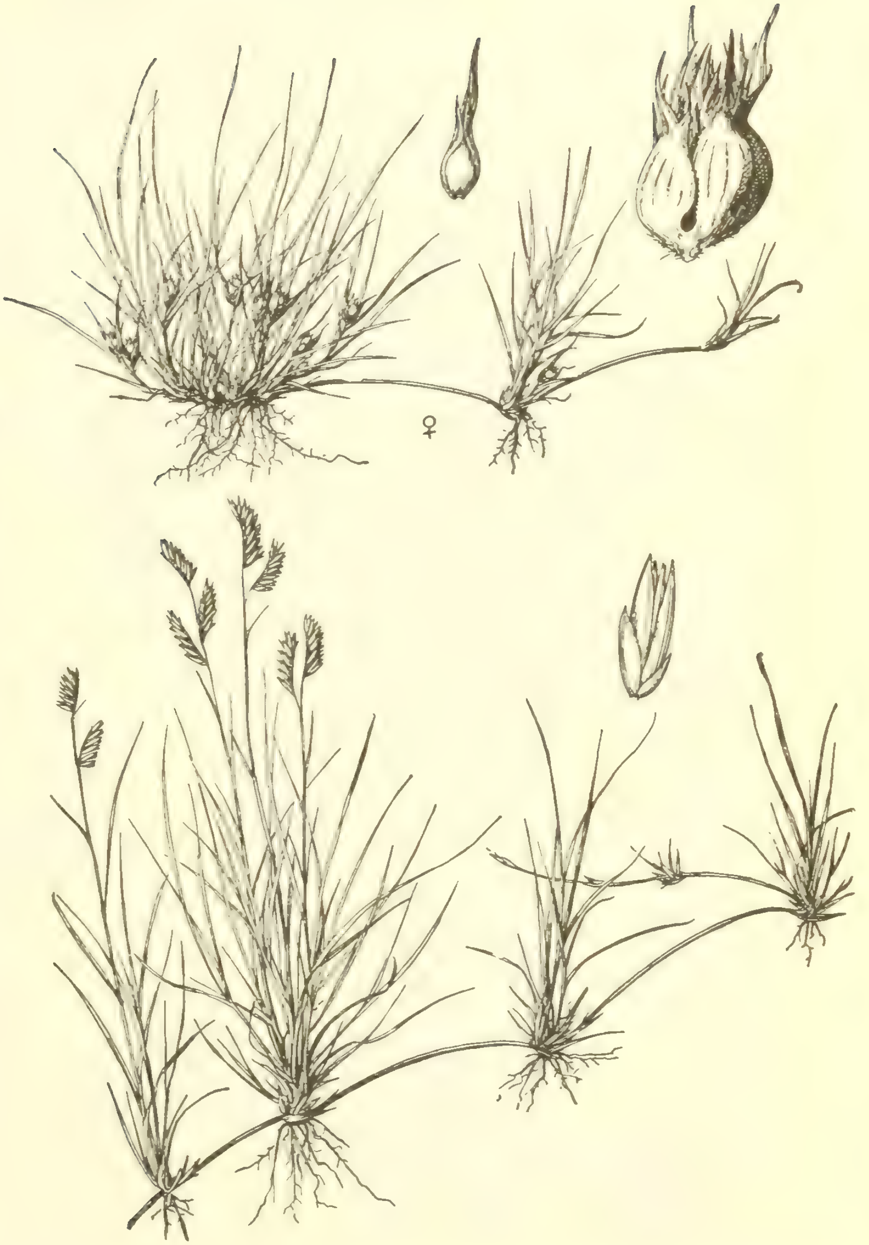
Figure 30.--Kalm brome





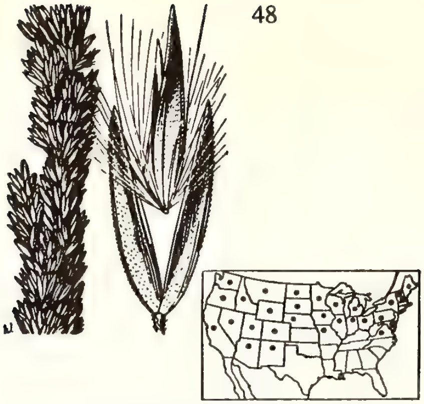
Bromus purgans.
Floret, × 5. (Deam 27982, Ind.)

Figure 32.–Canada brome



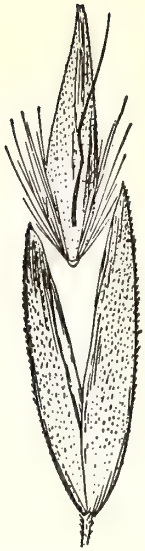
Buchloë dactyloides. Pistillate and staminate plants, × ½; pistillate spike and floret, × 5; staminate spikelet, × 5. (Ruth 156, Tex.)

Figure 33.–Buffalograss



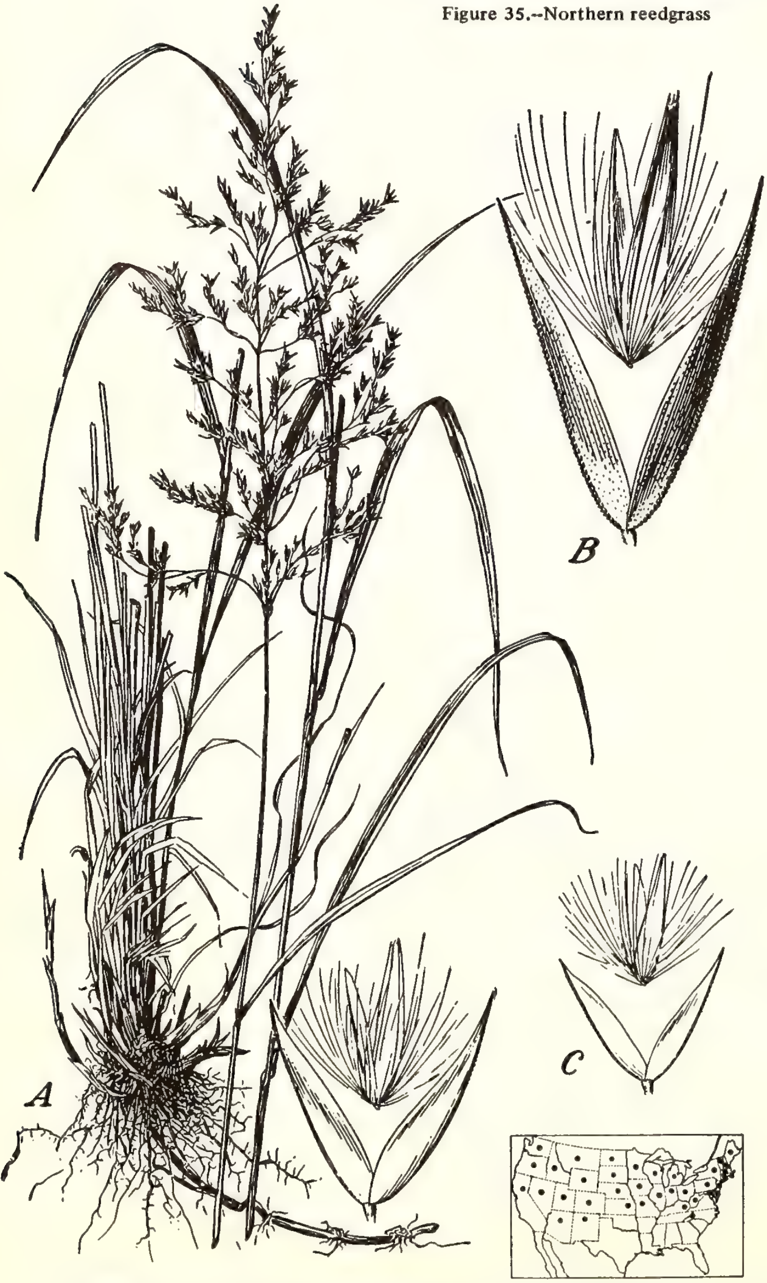
Calamagrostis inexpansa. Panicle, × 1; glumes and floret, × 10. (Ehlers 566, Mich.)

Figure 35.--Northern reedgrass



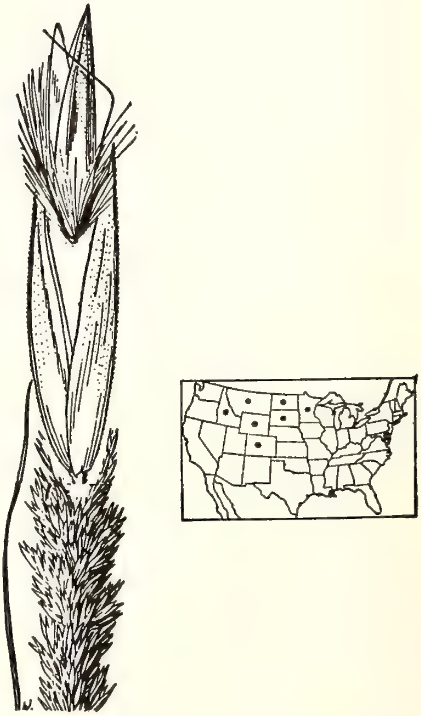
Calamagrostis lacustris. Glumes and floret, × 10. (Type.)

Figure 36.--[No standard common name]



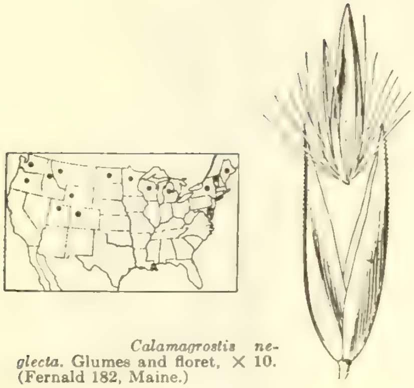
A, Calamagrostis canadensis. Plant, × ½; glumes and floret, × 10. (Chase 5077, Mont.) *B,* Var. *scabra,* × 10. (Pringle, N. H.) *C,* Var. *macouniana,* × 10. (Pammel 891, Minn.)

Figure 34.--Bluejoint reedgrass



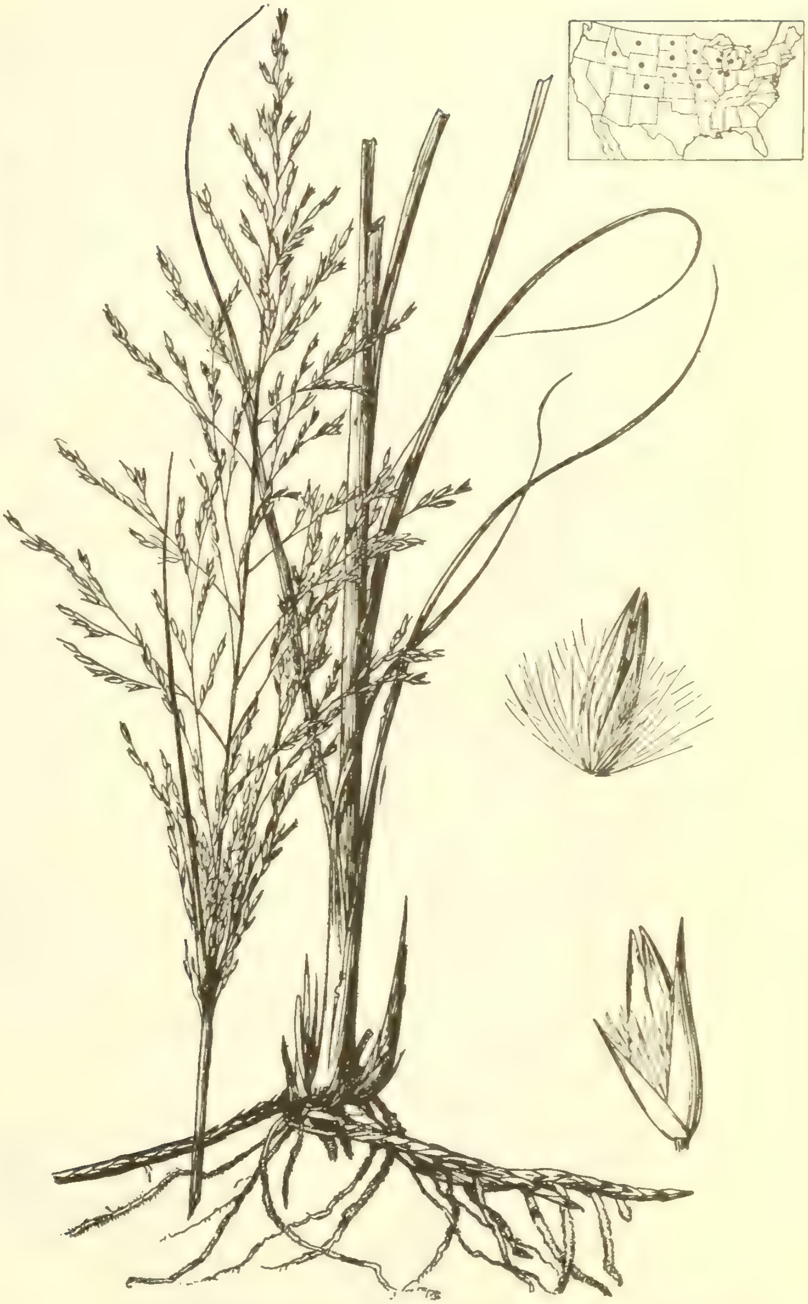
Calamagrostis montanensis. Panicle, × 1; glumes and floret, × 10. (Scribner 363, Mont.)

Figure 37.--Plains reedgrass



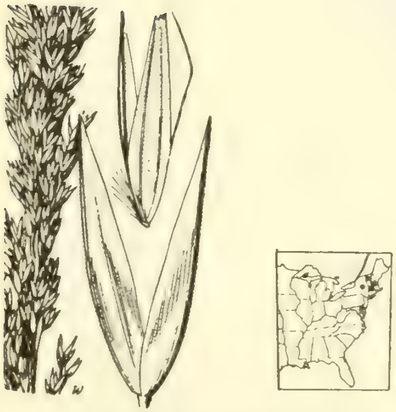
Calamagrostis neglecta. Glumes and floret, × 10. (Fernald 182, Maine.)

Figure 38.--Slimstem reedgrass



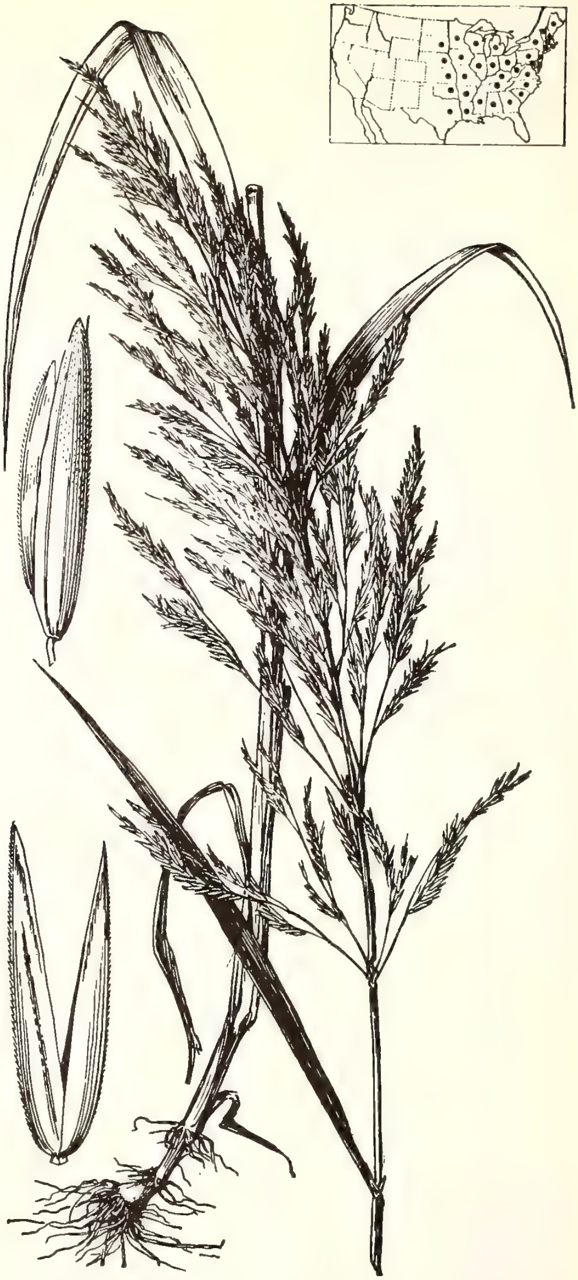
Calamovilfa longifolia. Plant, × ½; spikelet and floret, × 5. (Babcock, Ill.)

Figure 40.--Prairie sandreed



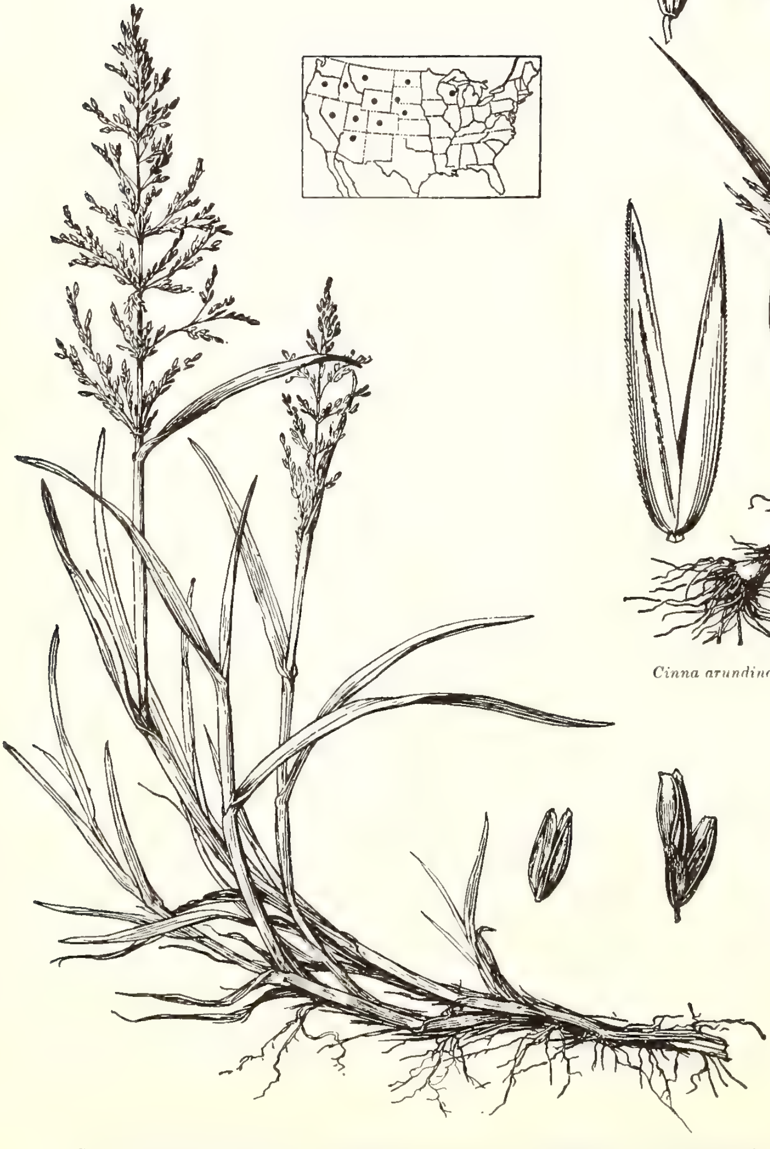
Calamagrostis pickeringii. Panicle, × 1; glumes and floret, × 10. (Hubbard 634, Mass.)

Figure 39.--Pickering reedgrass



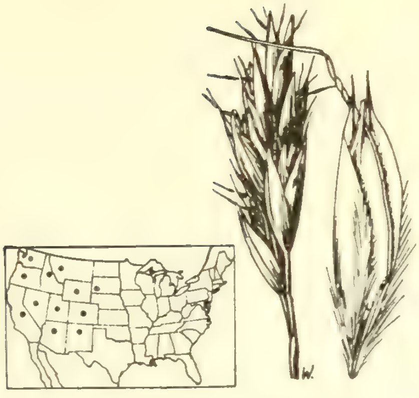
Cinna arundinacea. Plant, × ½; glumes and floret, × 10. (Dewey 336, Va

Figure 42.--Stout woodreed



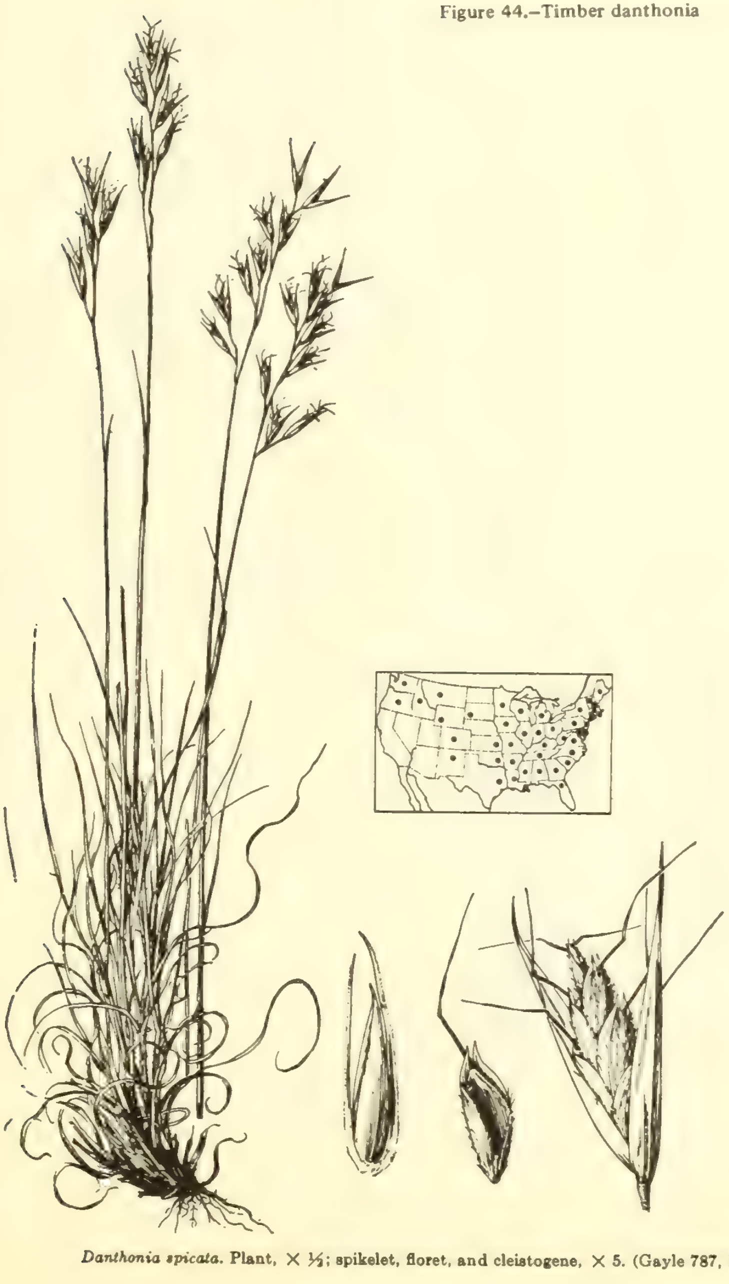
Catabrosa aquatica. Plant, × ½; spikelet and floret, × 5. (Williams and Fernald, Quebec.)

Figure 41.--Brookgrass



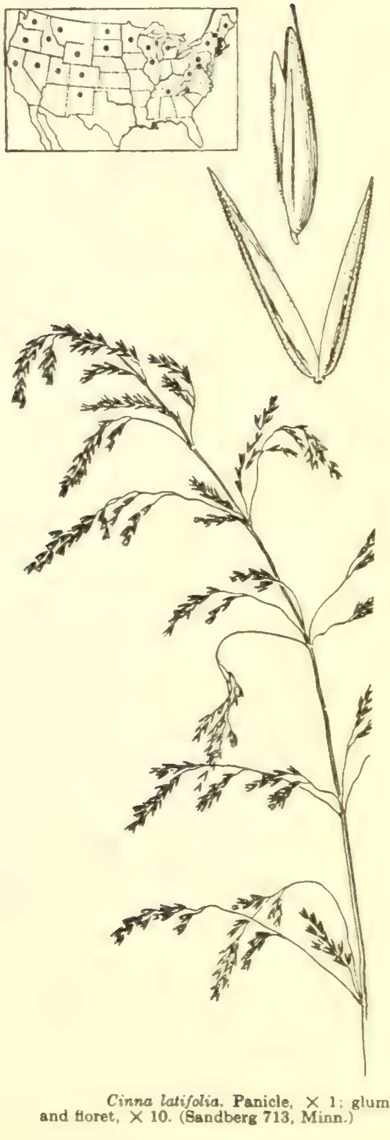
Danthonia intermedia. Panicle, × 1; floret, × 5. (Hitchcock 11288, Mont.)

Figure 44.–Timber danthonia



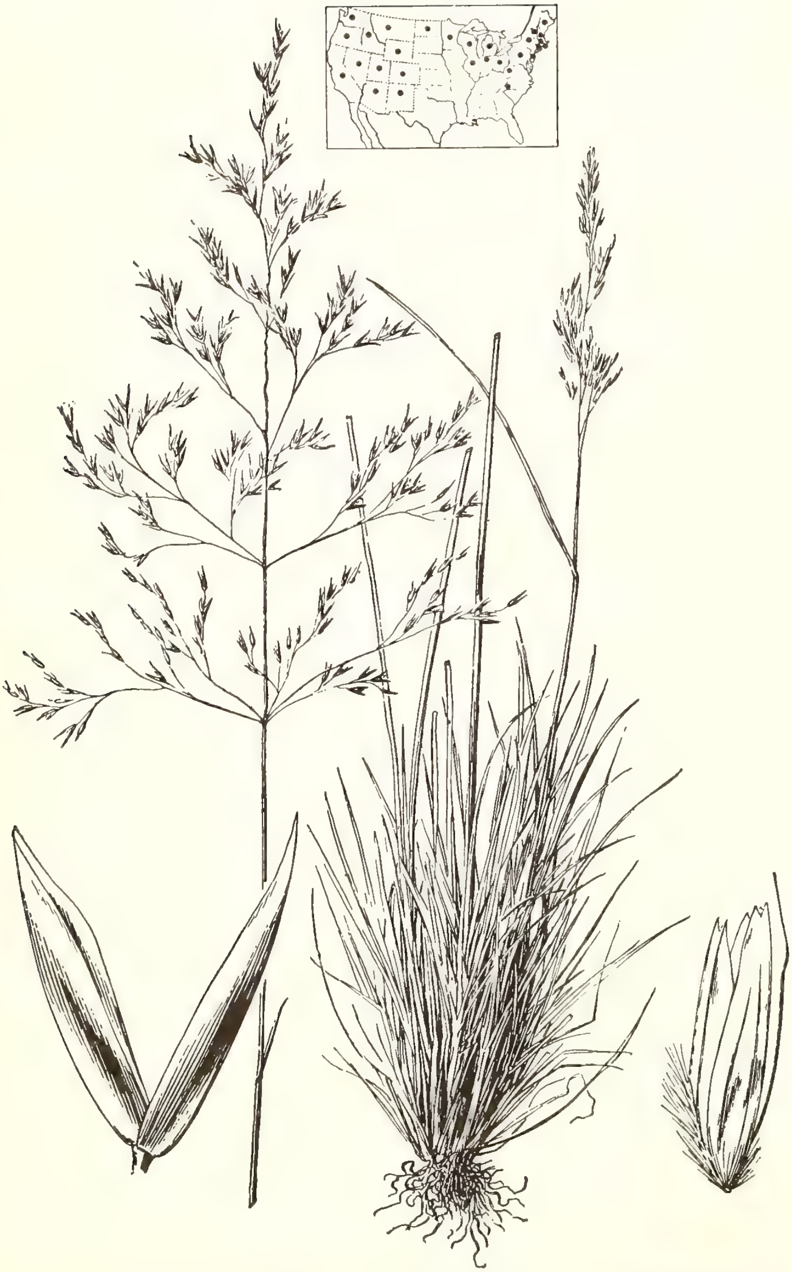
Danthonia spicata. Plant, × ½; spikelet, floret, and cleistogene, × 5. (Gayle 787, Maine.)

Figure 45.–Poverty danthonia



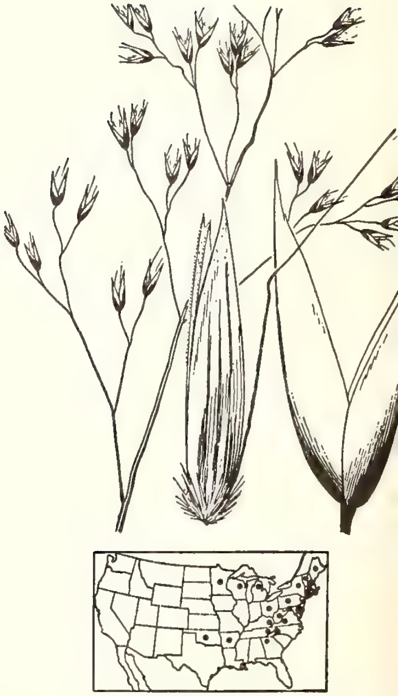
Cinna latifolia. Panicle, × 1; glumes and floret, × 10. (Sandberg 713, Minn.)

Figure 43.–Drooping woodreed



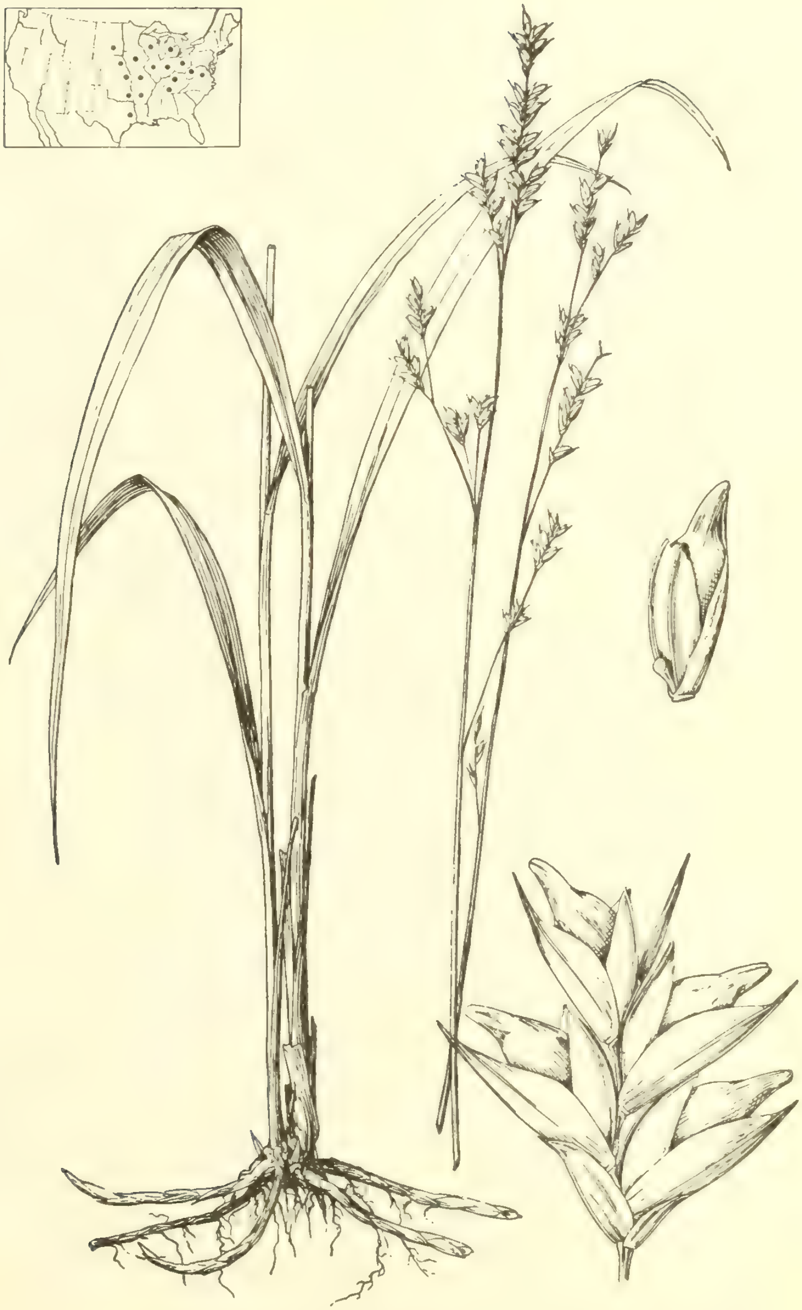
Deschampsia caespitosa. Plant, × ½; glumes and floret, × 10. (Nelson 3623, Wyo.)

Figure 46.–Tufted hair-grass



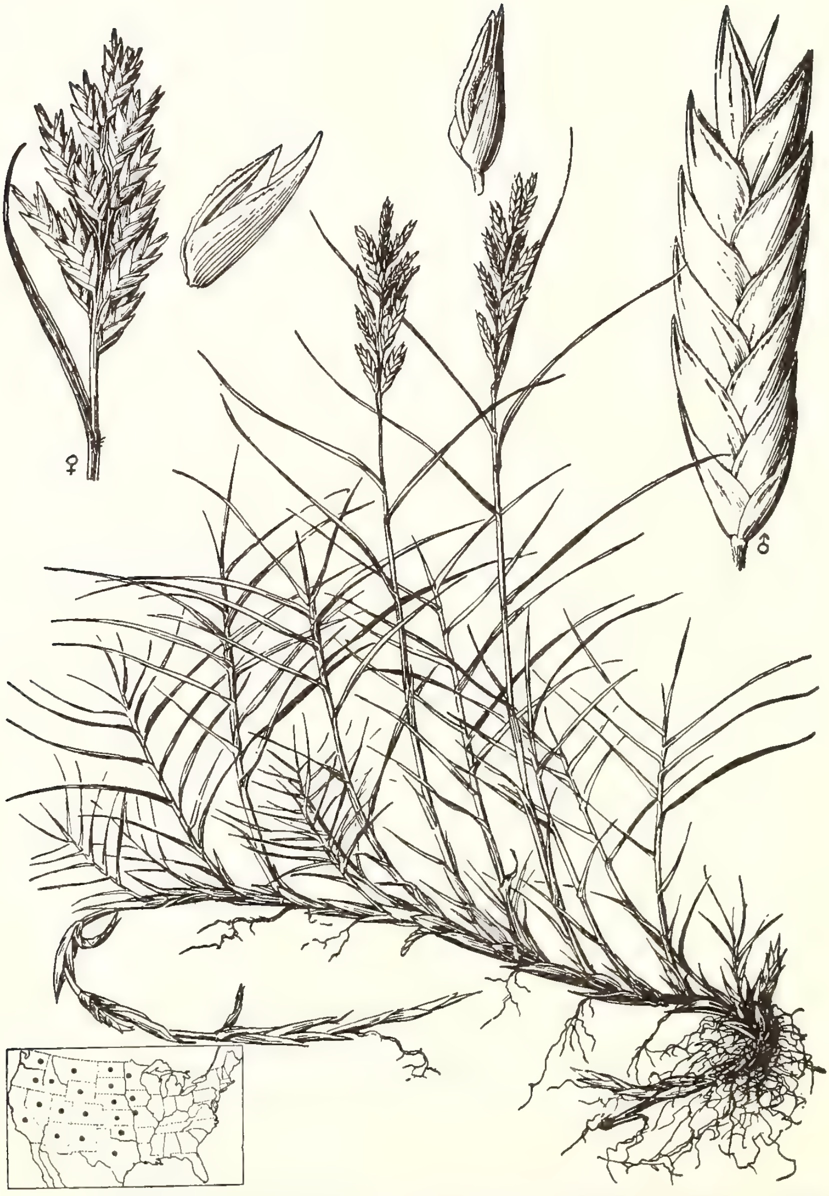
Deschampsia flexuosa. Panicle, ×
glumes and floret, × 10. (Hitchcock 16059, N. H.)

Figure 47.–Wavy hair-grass



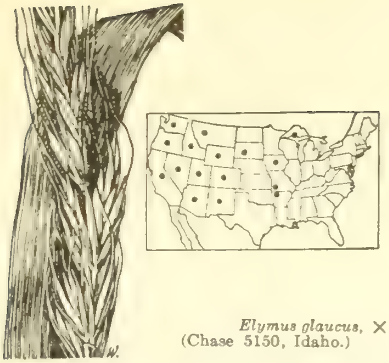
Diarrhena americana. Plant, × ½; spikelet and floret, × 5. (Wilcox 66, Ill.)

Figure 48.–American beakgrain



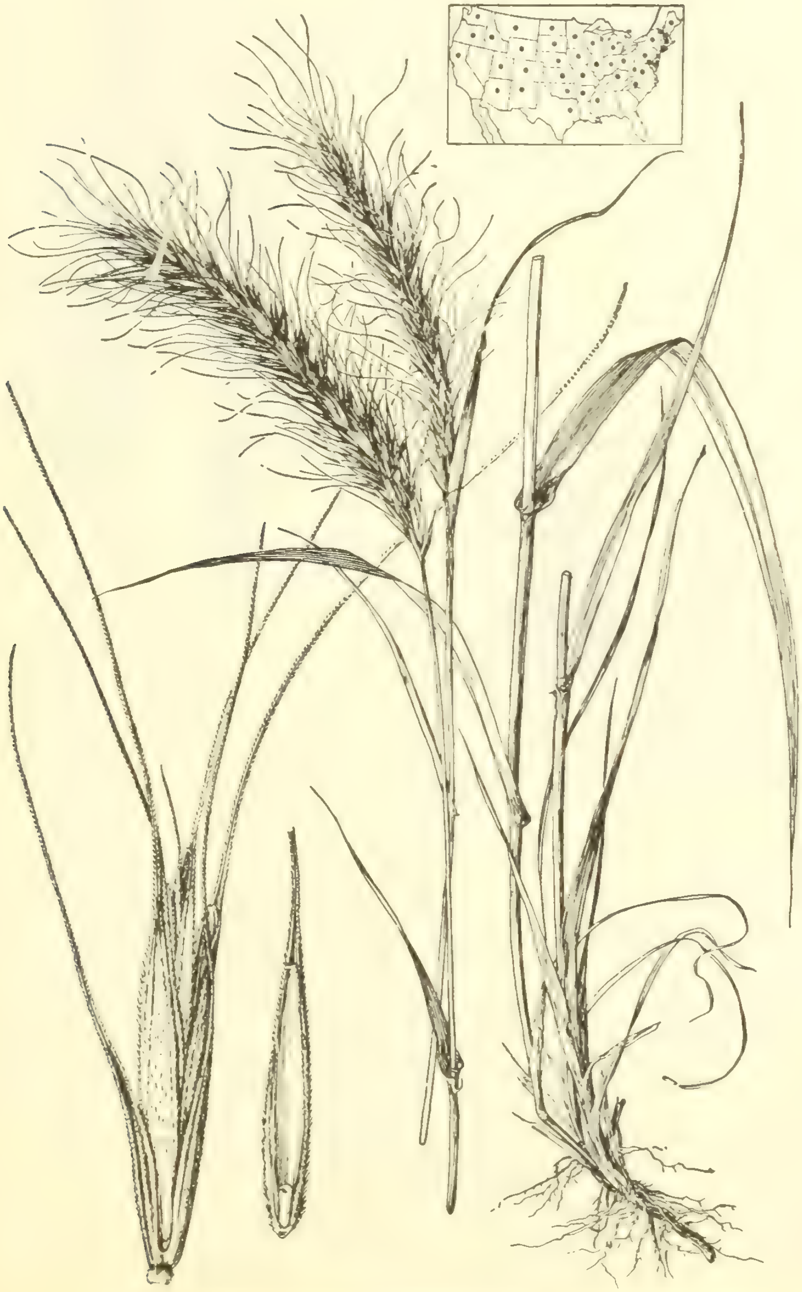
Distichlis stricta. Staminate plant, × ½; staminate spikelet and floret, × 5 (Mearns 3132, Calif.) pistillate panicle, × 1; pistillate floret, × 5 (Sandberg and Leiberg 463, Wash.).

Figure 49.–Inland saltgrass



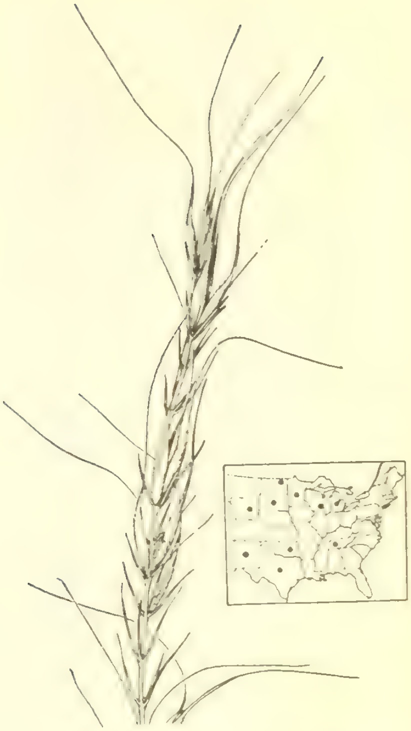
Elymus glaucus, × 1.
(Chase 5150, Idaho.)

Figure 51.–Blue wildrye



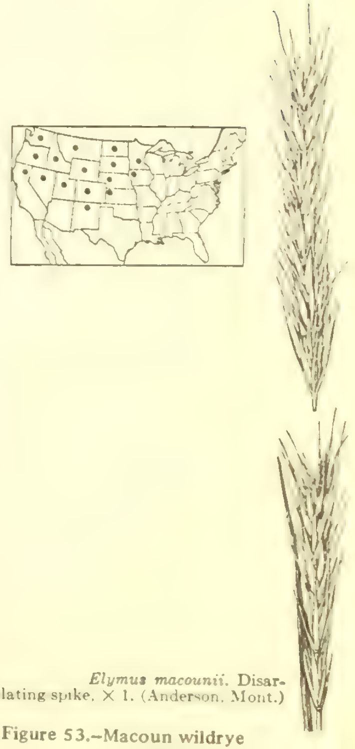
Elymus canadensis. Plant, × ½; spikelet and floret, × 5. (Lansing 3240, Mich.)

Figure 50.–Canada wildrye



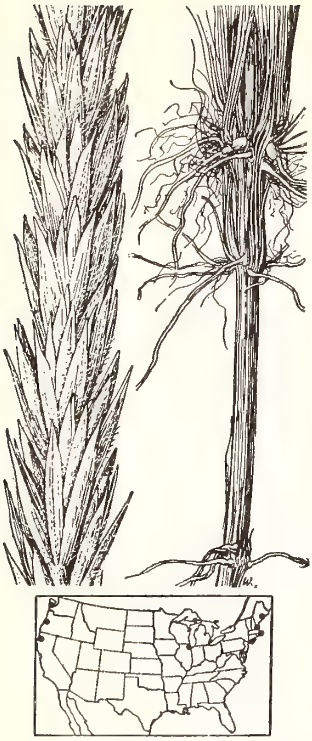
Elymus interruptus, × 1. (Grant 3071, Minn.)

Figure 52.–Texas wildrye



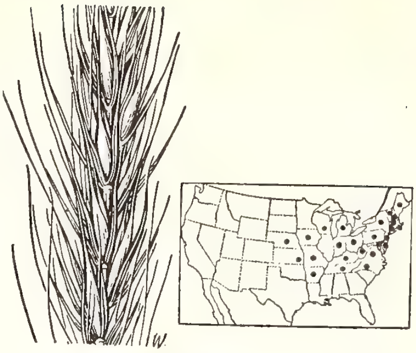
Elymus macounii. Disarticulating spike, × 1. (Anderson, Mont.)

Figure 53.–Macoun wildrye



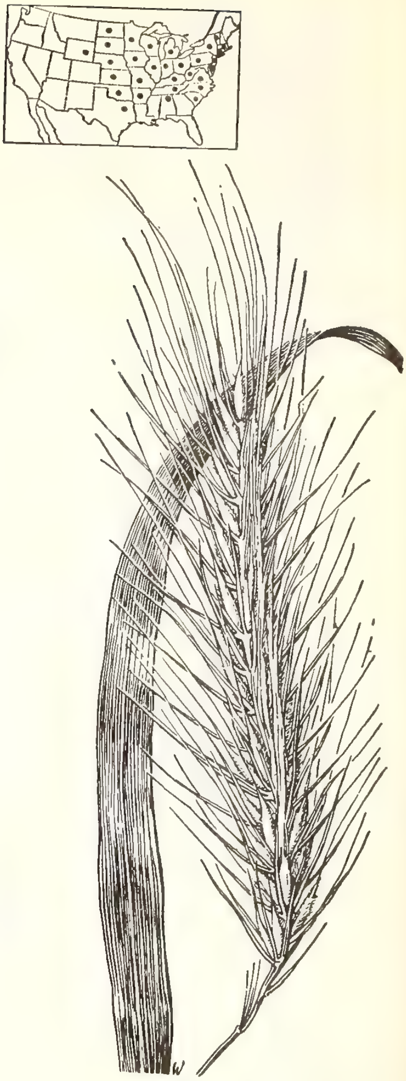
Elymus mollis, × 1. (Henderson 2169, Wash.)

Figure 54.--Common dune wildrye



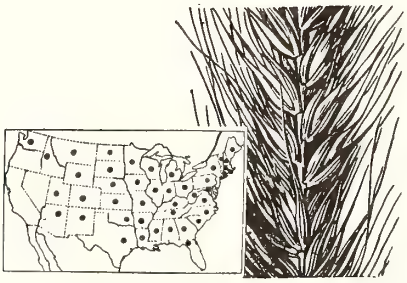
Elymus riparius, × 1. (Woodward, Conn.)

Figure 55.--Riverbank wildrye



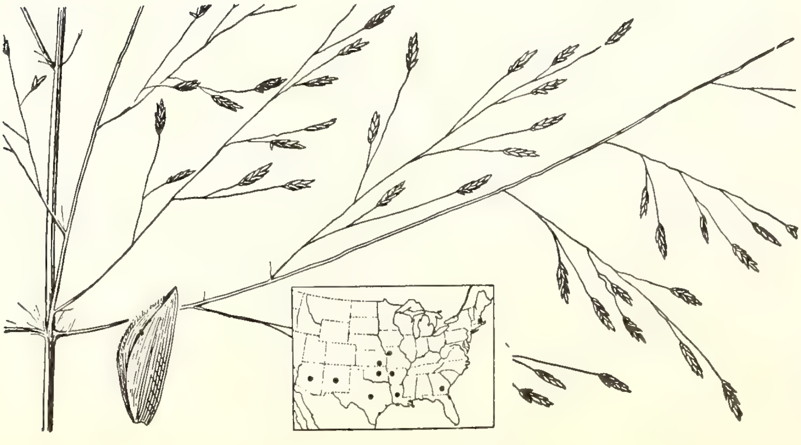
Elymus villosus, × 1. (Commons 163, Del.)

Figure 56.--Hairy wildrye



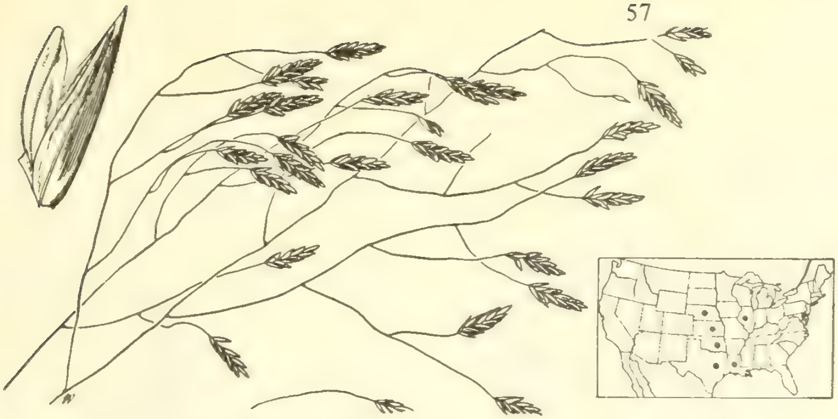
Elymus virginicus, × 1. (Hitchcock 79, Va.)

Figure 57.--Virginia wildrye



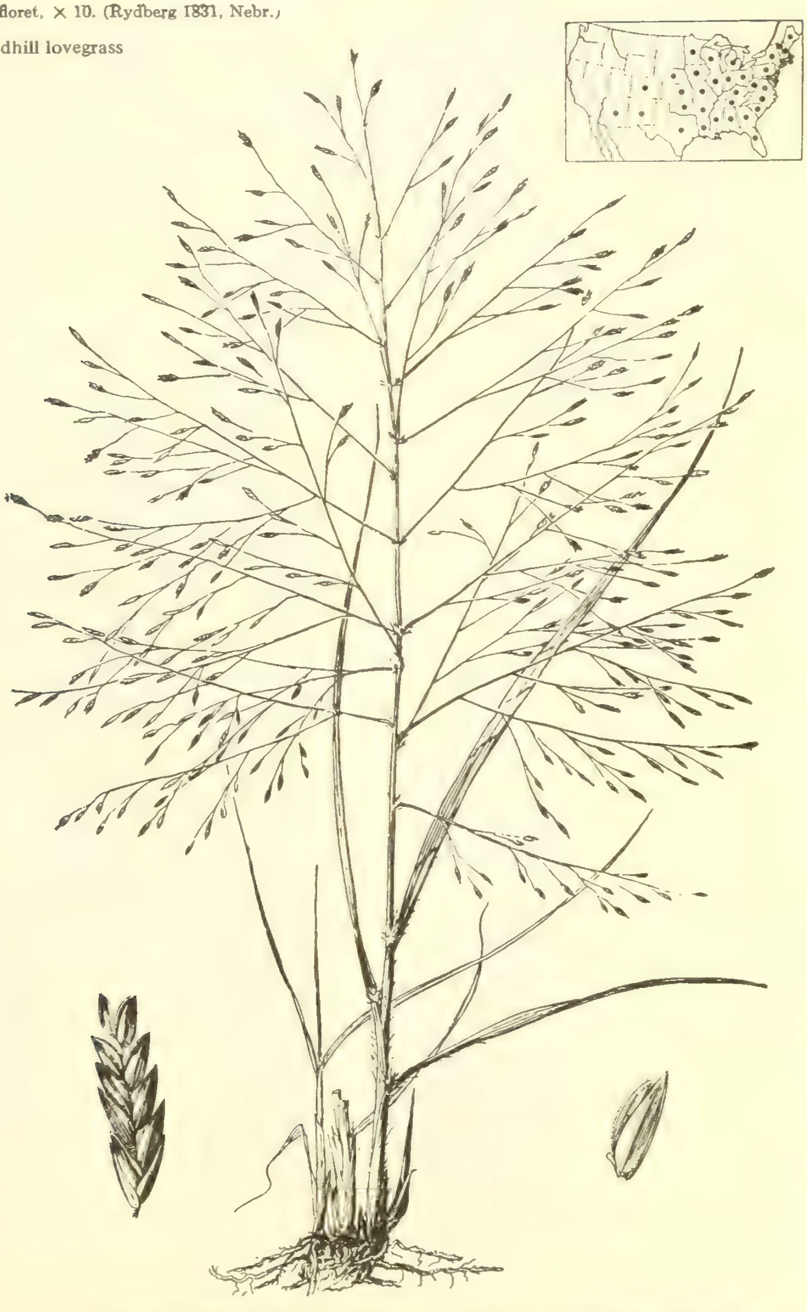
Eragrostis intermedia. Panicle, × 1; floret, × 10. (Type.)

Figure 58.--Plains lovegrass



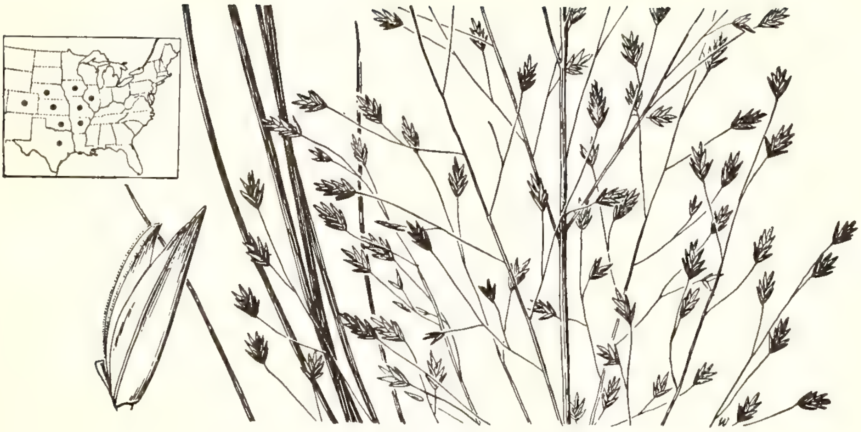
Eragrostis pilifera. Panicle, × 1; floret, × 10. (Rydberg 1831, Nebr.)

Figure 59.--Sandhill lovegrass



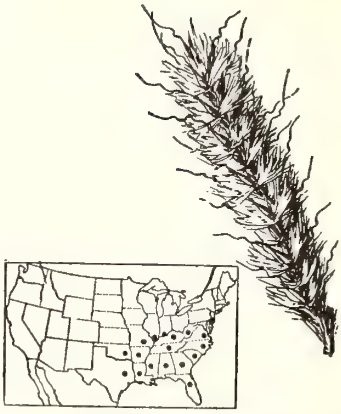
Eragrostis spectabilis. Plant, × ½; spikelet, × 5; floret, × 10. (Hitchcock 7849, Md.)

Figure 60.--Purple lovegrass



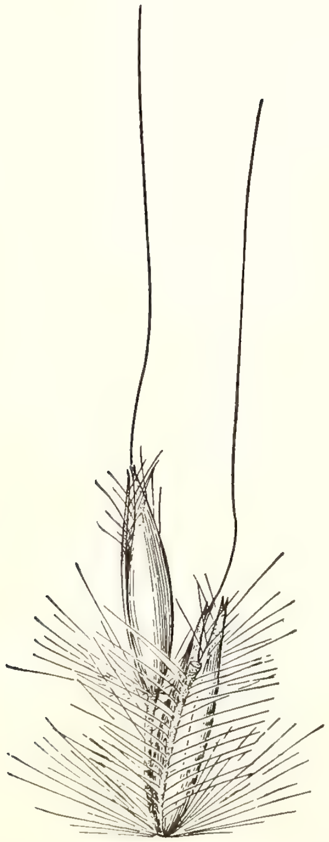
Eragrostis trichodes. Panicle, × 1; floret, × 10. (Reverchon, Tex.)

Figure 61.--Sand lovegrass



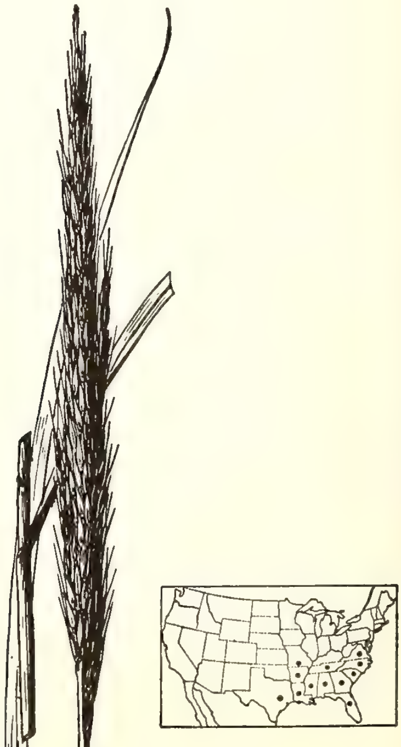
Erianthus alopecuroides, × ½. (Chase 4213, Fla.)

Figure 62.--Silver plumegrass



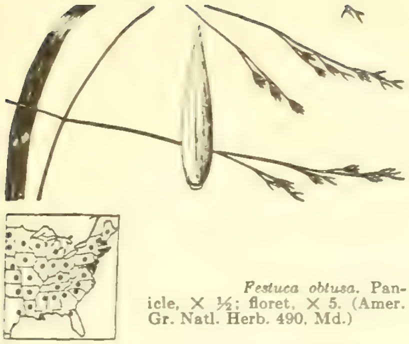
Erianthus brevibarbis. Pair of spikelets with pedicel and rachis joint, × 5. (Demaree 8228, Ark.)

Figure 63.--Brown plumegrass



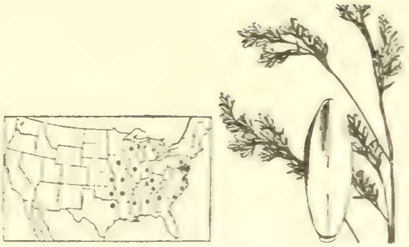
Erianthus strictus, × ½. (Curtiss 6936, Fla.)

Figure 64.--Narrow plumegrass



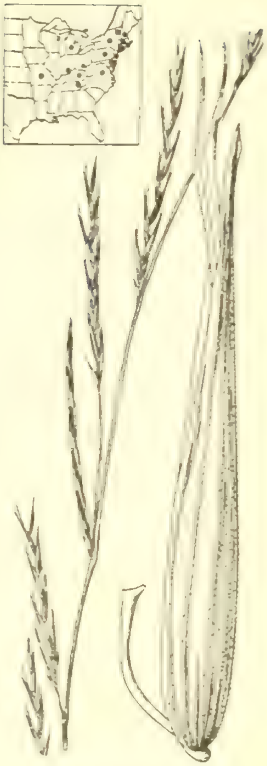
Festuca obtusa. Panicle, × ½; floret, × 5. (Amer. Gr. Natl. Herb. 490, Md.)

Figure 65.--Nodding fescue



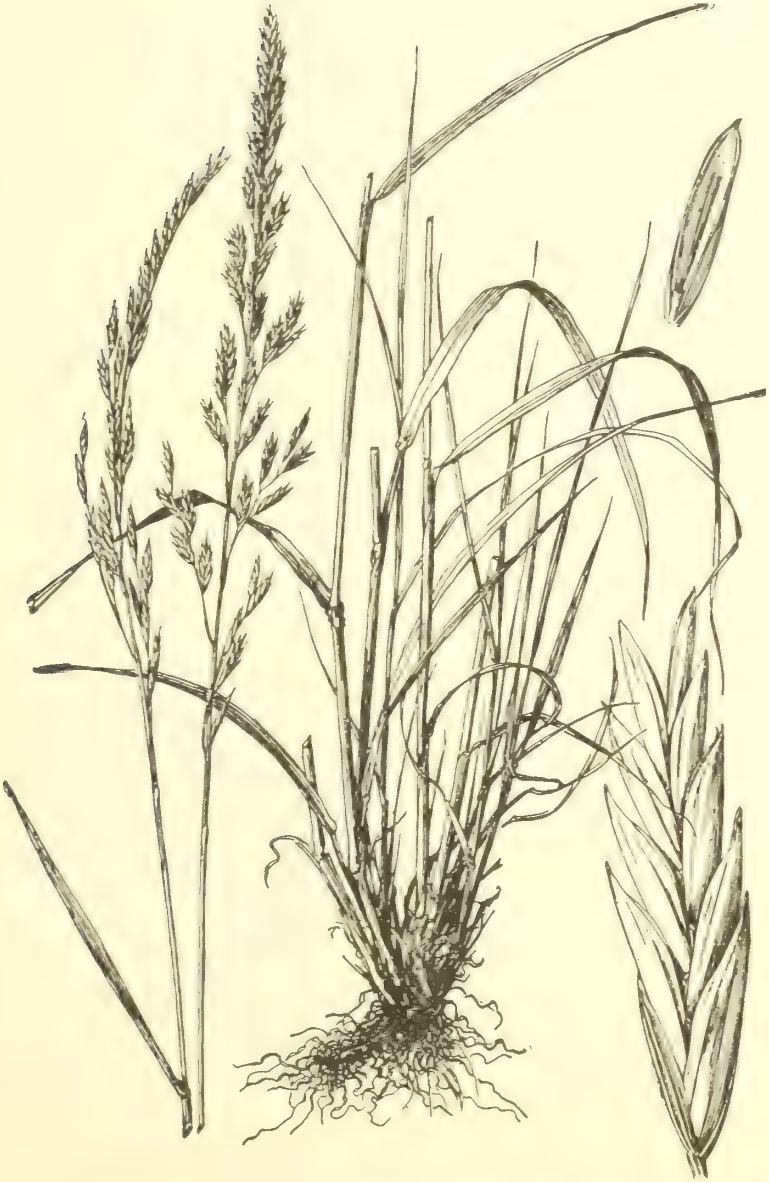
Festuca paradoxa. Panicle, × ½; floret × 5. (Palmer 34672, Mo.)

Figure 66.--Cluster fescue



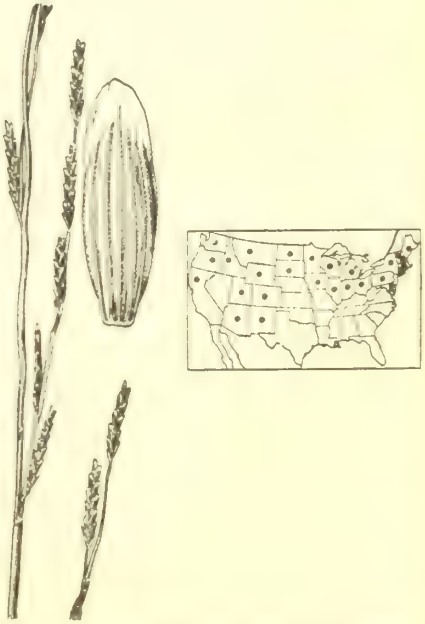
Glyceria acutiflora. Panicle, × 1; floret, × 10. (Knowlton 866, Mass.)

Figure 67.--Creeping mannagrass



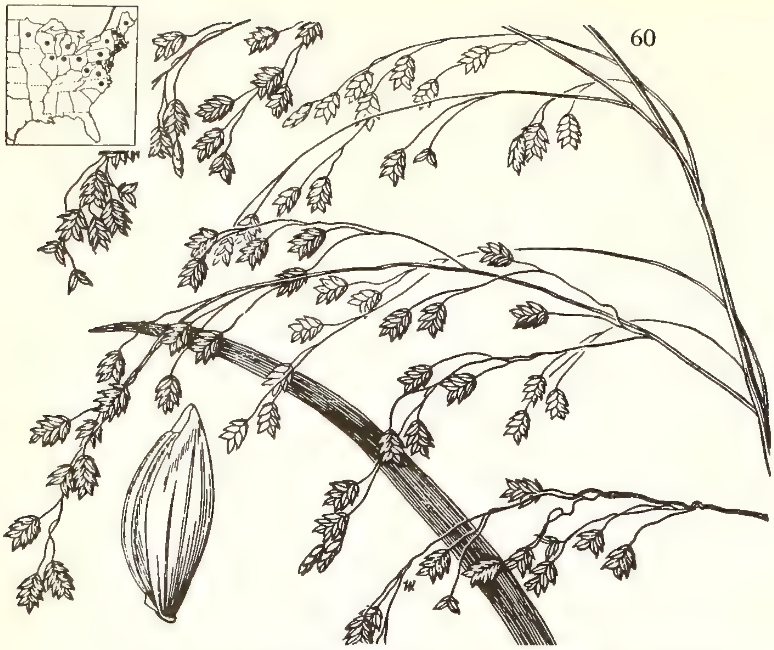
Festuca elatior. Plant, × ½; spikelet and floret, × 5. (Amer. Gr. Natl. Herb. 488, D. C.)

Figure 65a.--Meadow fescue (exotic)



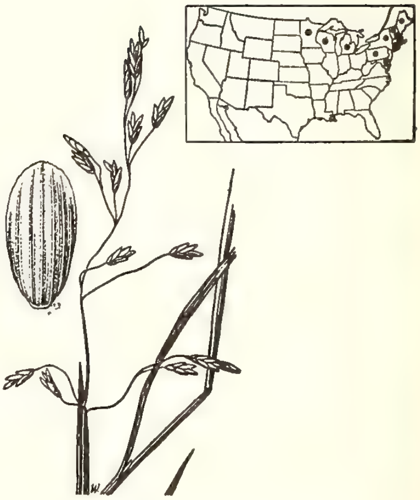
Glyceria borealis. Panicle, × 1; floret, × 10. (Fernald 193, Maine.)

Figure 68.--Northern mannagrass



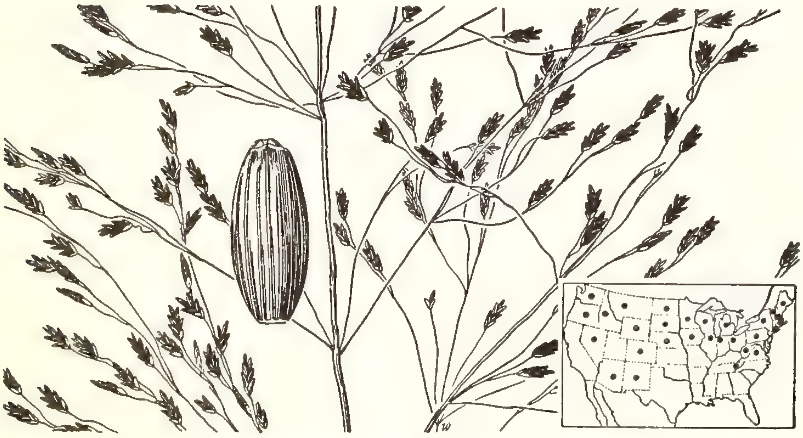
Glyceria canadensis. Panicle, × 1; floret, × 10. (Kneucker, Gram. 464, Conn.)

Figure 69.--Rattlesnake mannagrass



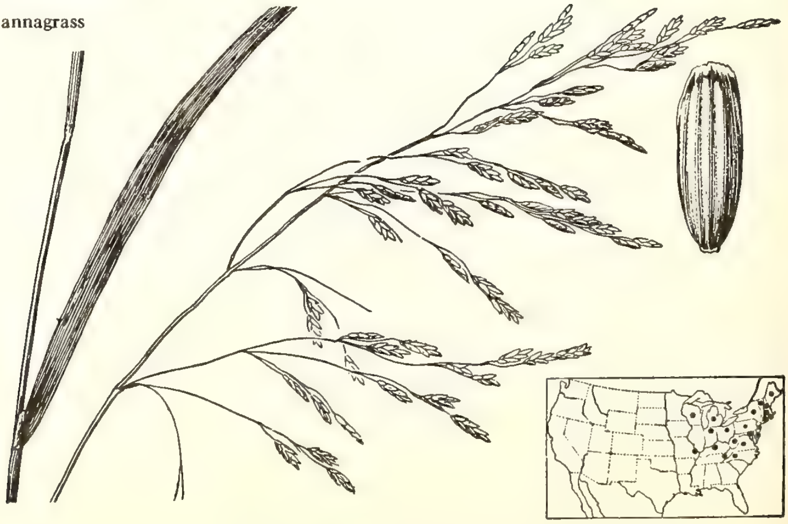
Glyceria fernaldii. Plant, × 1; floret, × 10. (Collins, Fernald, and Pease, Quebec.)

Figure 70.--Fernald mannagrass



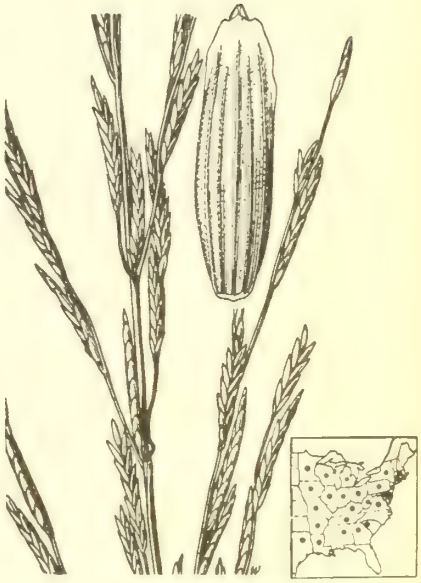
Glyceria grandis. Panicle, × 1; floret, × 10. (Pearce, N. Y.)

Figure 71.--American mannagrass



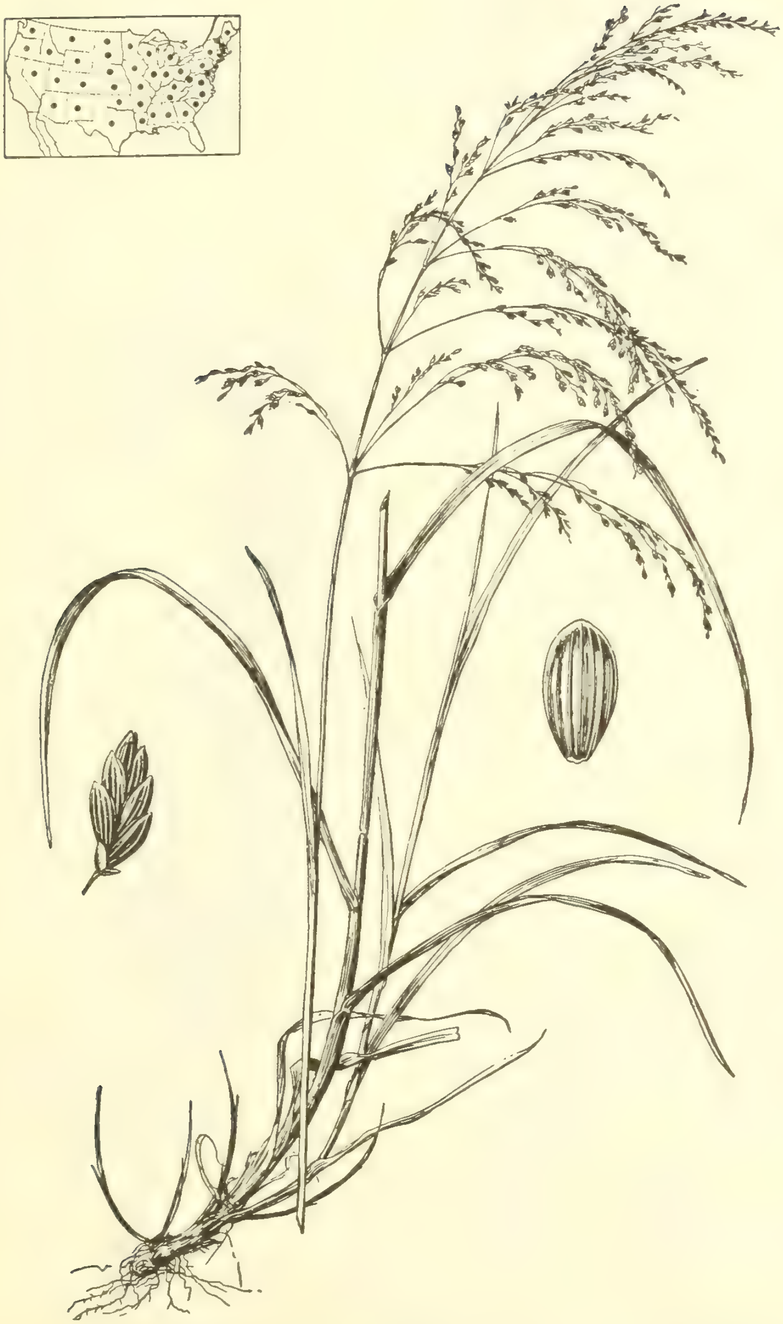
Glyceria pallida. Plant, × 1; floret, × 10. (Pearce, N. Y.)

Figure 72.--Pale mannagrass



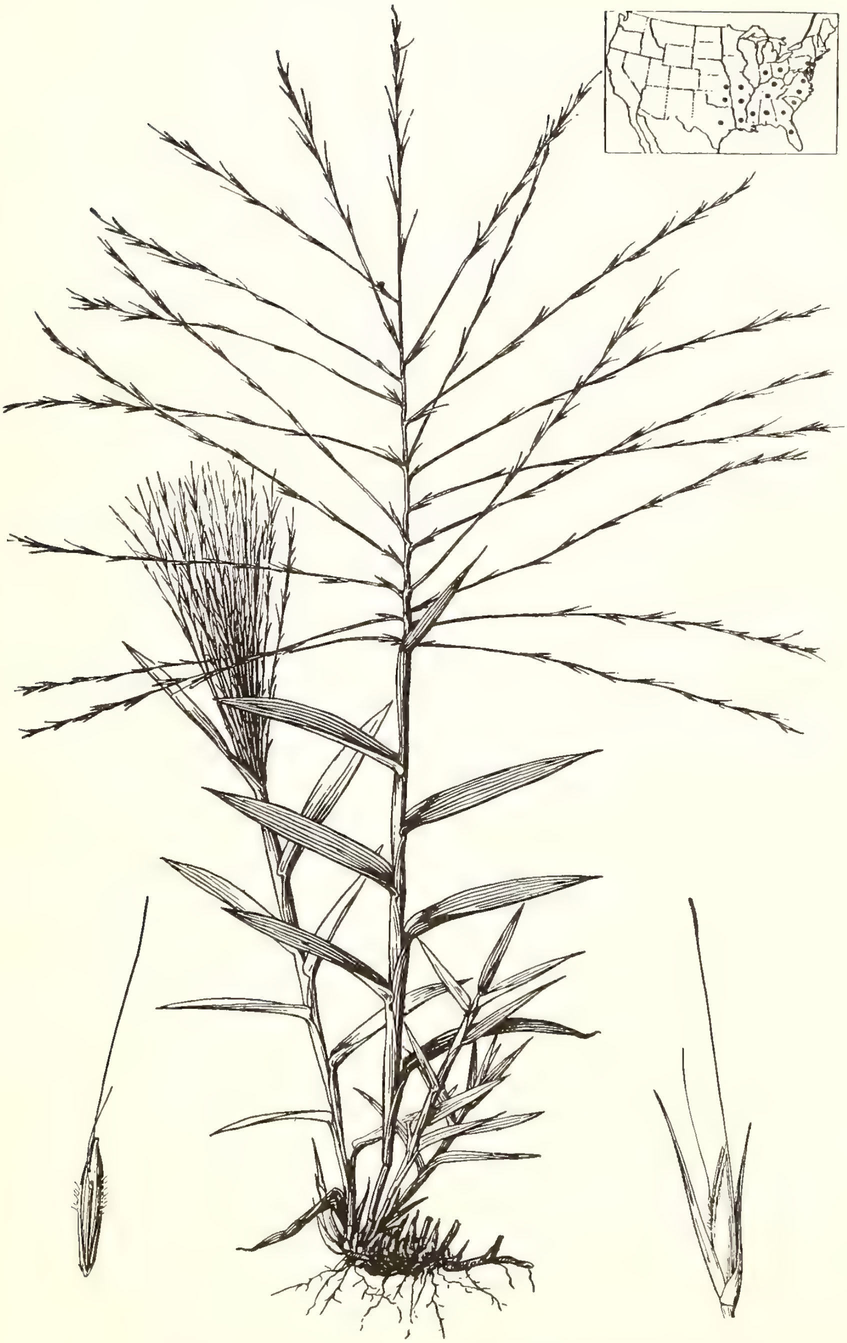
Glyceria septentrionalis. Panicle, × 1; floret, × 10. (Deam 3184, Ind.)

Figure 73.–Eastern mannagrass



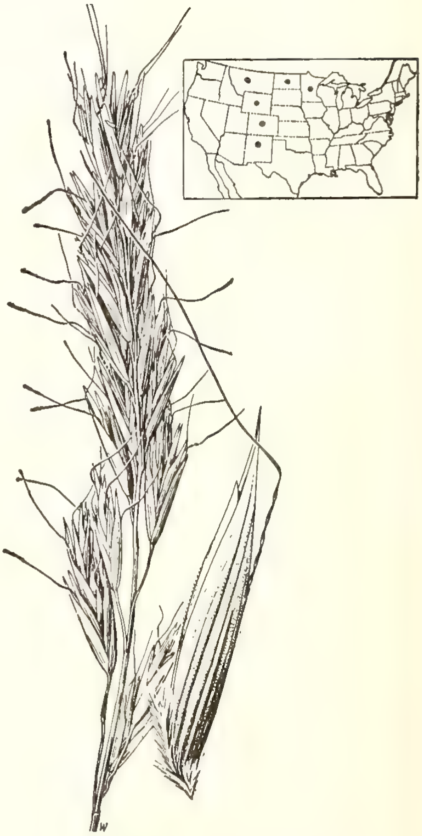
Glyceria striata. Plant, × ½; spikelet, × 5; floret, × 10. (V. H. Chase 60, Ill.)

Figure 74.–Fowl mannagrass



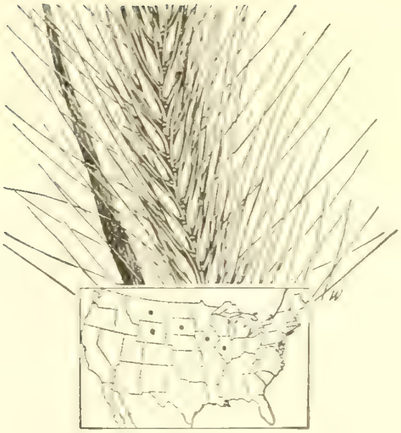
Gymnopogon ambiguus. Plant, × ½; spikelet and floret, × 5. (Tracy 8292, Tex.)

Figure 75.--Bearded skeletongrass



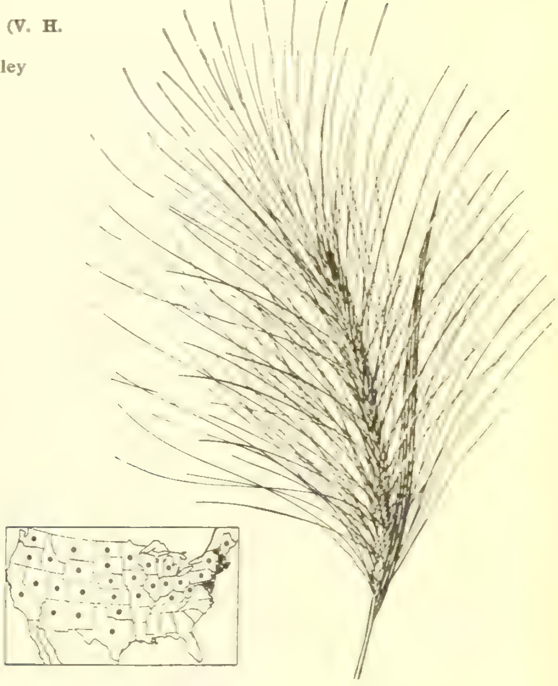
Helictotrichon hookeri. Panicle, × 1; floret, × 5. (Scribner 372, Mont.)

Figure 76.--Spike oat (Hitchcock)



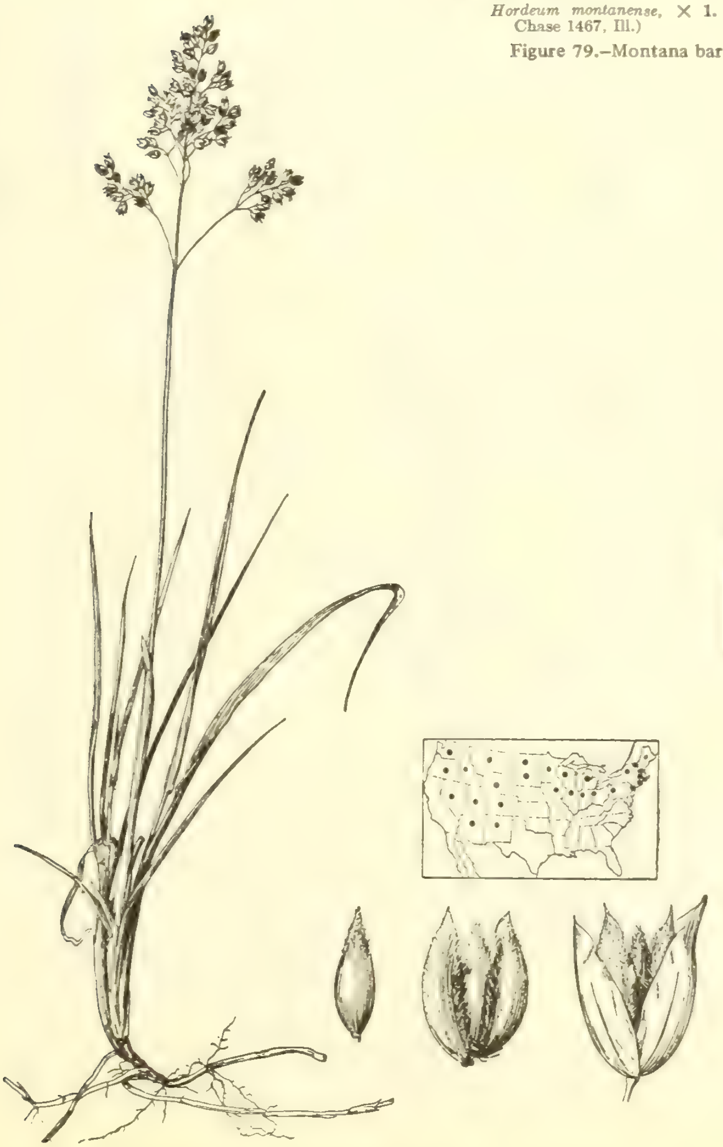
Hordeum montanense, × 1. (V. H. Chase 1467, Ill.)

Figure 79.–Montana barley



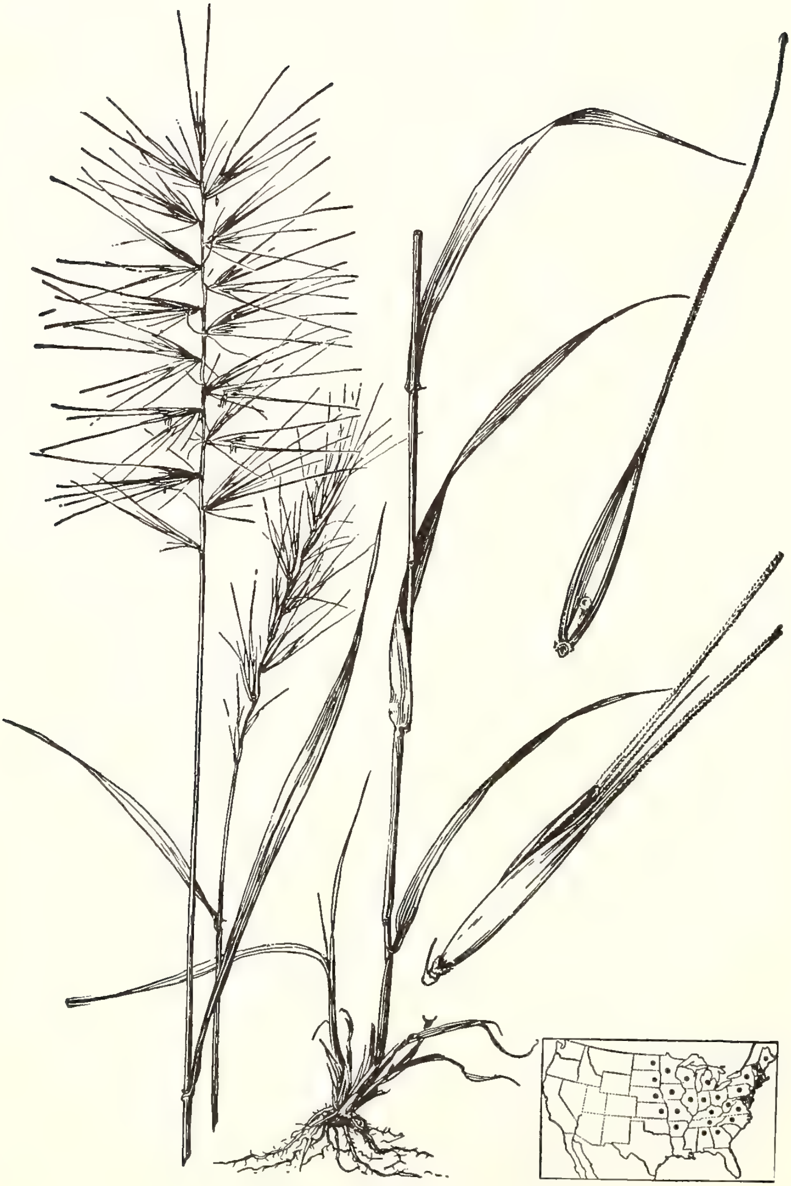
Hordeum jubatum, × 1. (Blankinship 189, Mont.)

Figure 78.--Foxtail barley



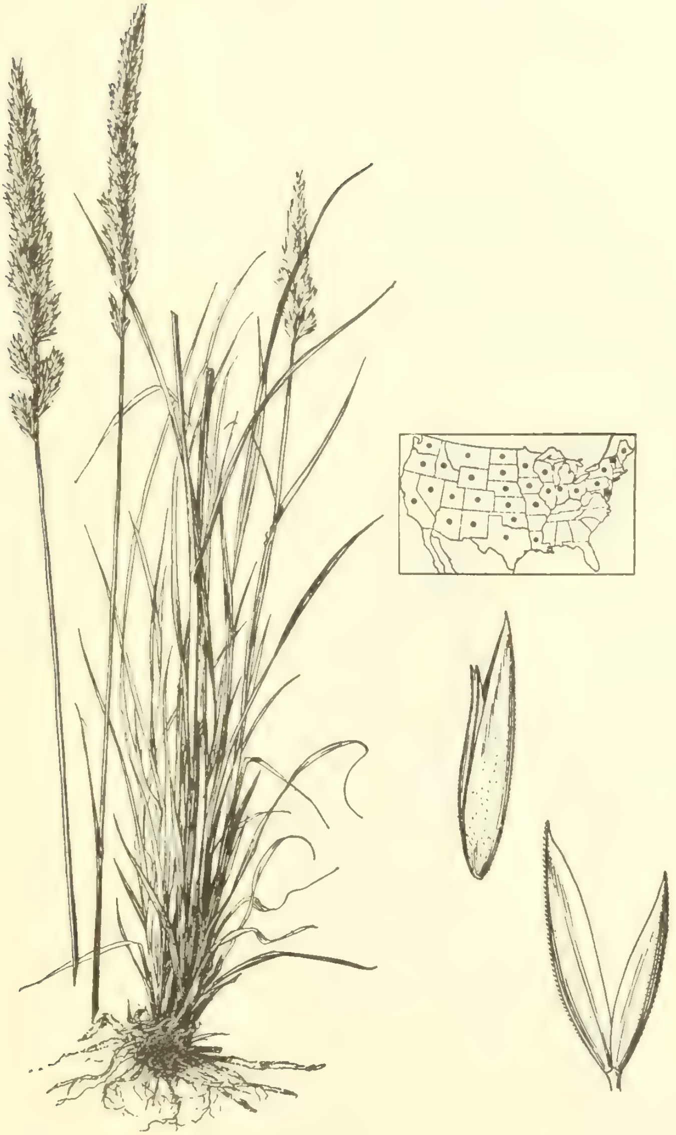
Hierochloë odorata. Plant, × ½; spikelet, florets, and fertile floret, × 5. (Shear 437, Mont.)

Figure 77.–Sweetgrass



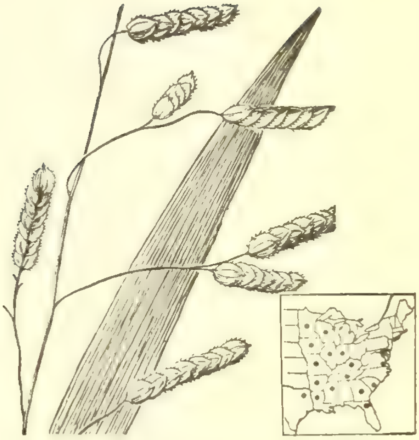
Hystrix patula. Plant, × ½; spikelet and floret, × 3. (Moyer, Minn.)

Figure 80.–Bottlebrushgrass



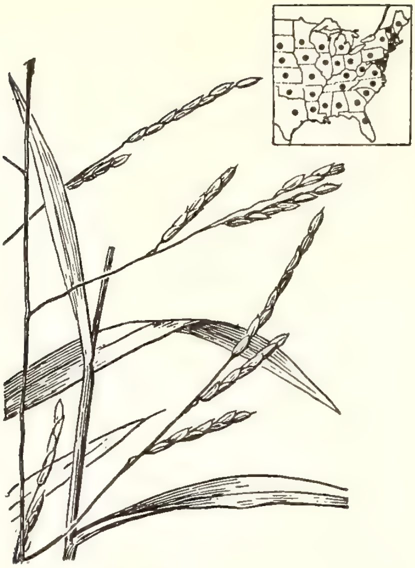
Koeleria cristata. Plant, × ½; glumes and floret, × 10. (Bebb 2862, Ill.)

Figure 81.–Prairie junegrass



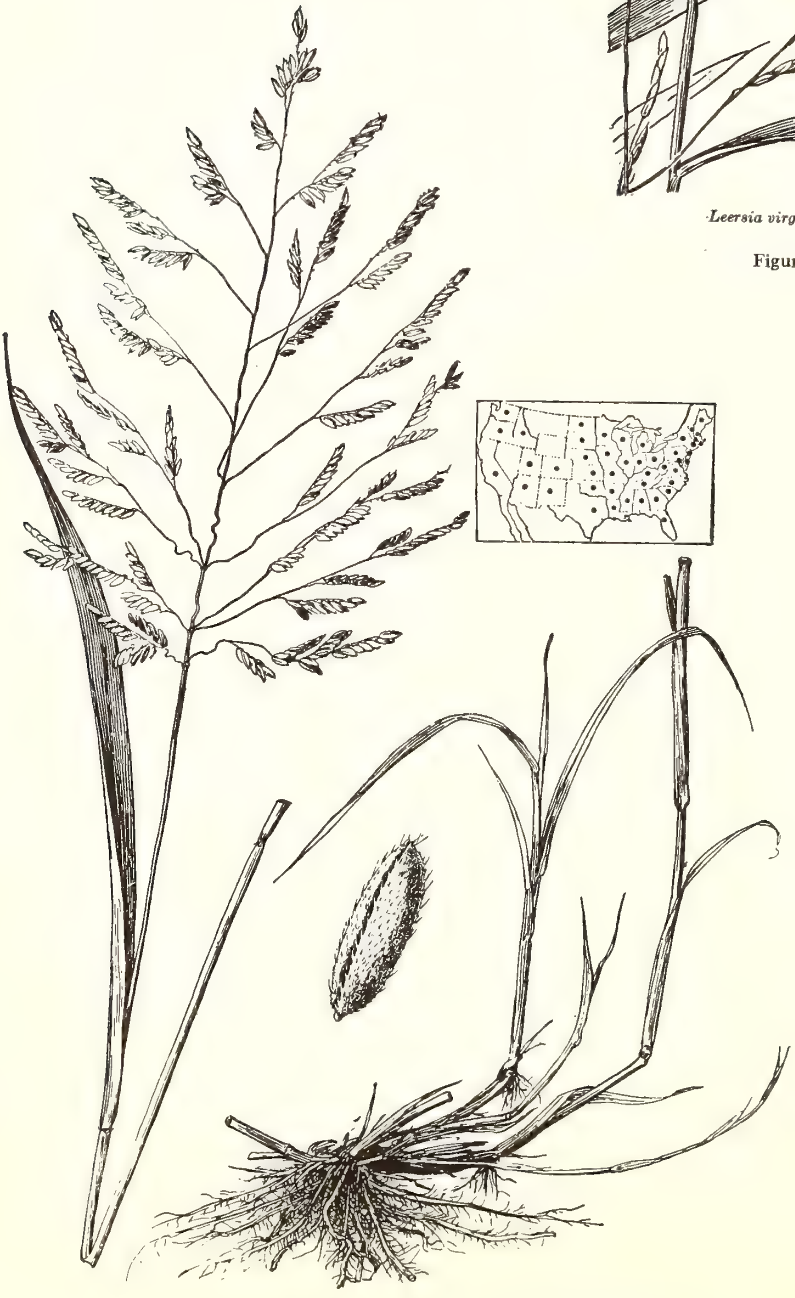
Leersia lenticularis, × 1. (McDonald 68, Ill.)

Figure 82.–Catchflygrass



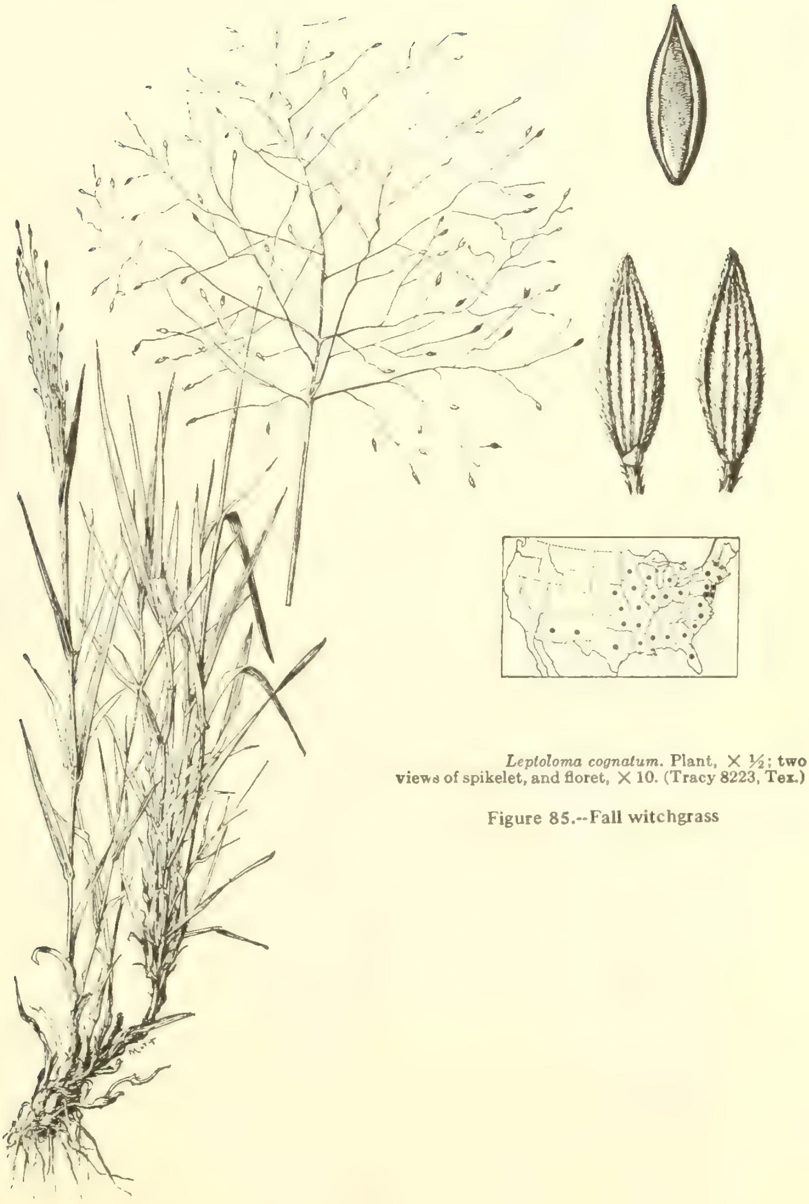
Leersia virginica, × 1. (French, Iowa.)

Figure 84.–Whitegrass



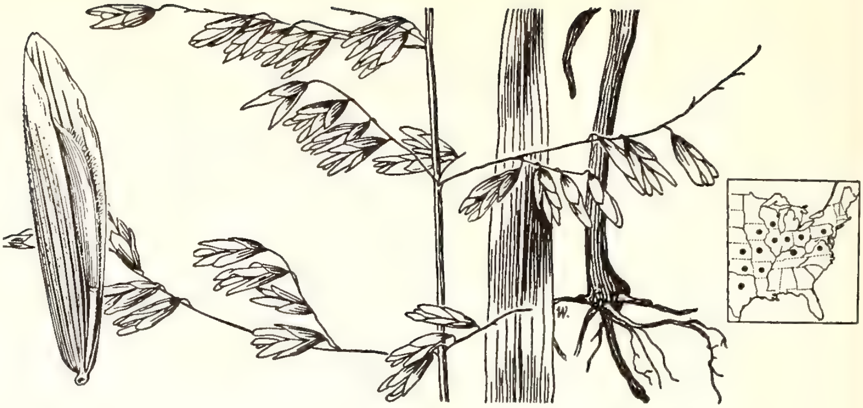
Leersia oryzoides. Plant, × ½; spikelet, × 5. (Hitchcock 5317, Tex.)

Figure 83.–Rice cutgrass



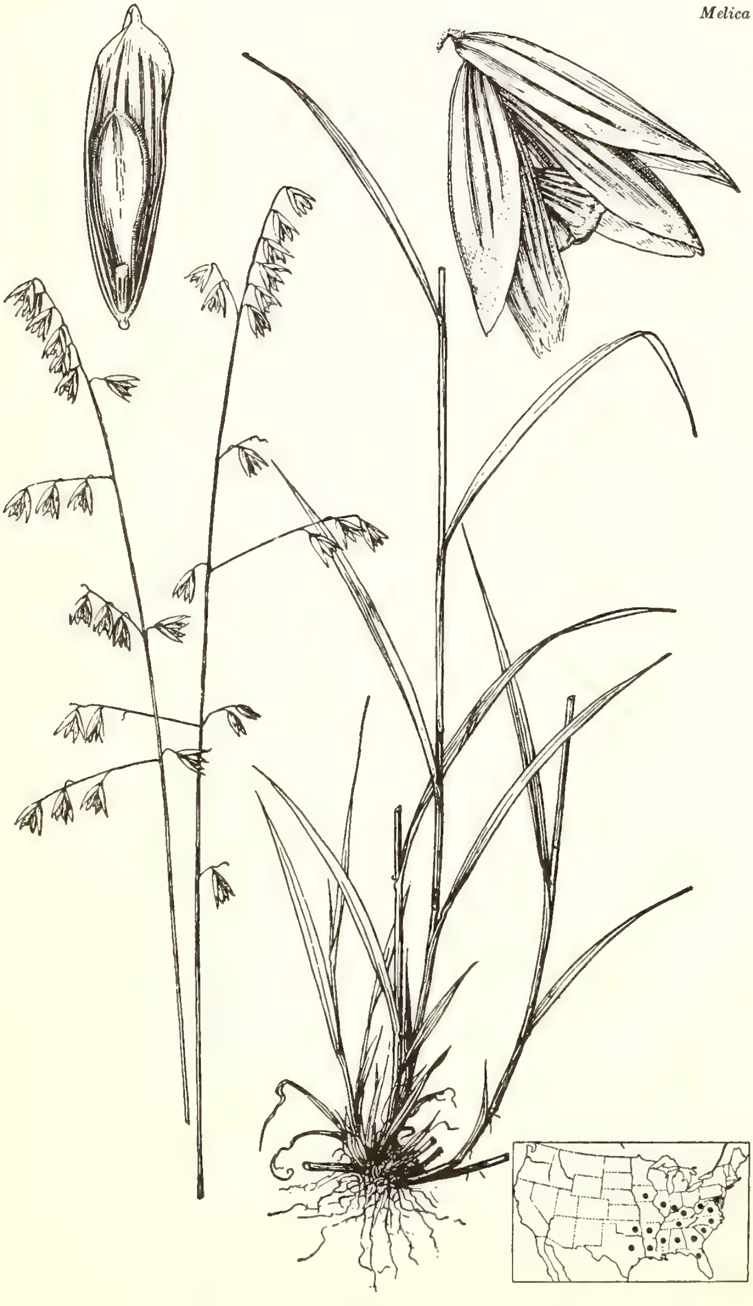
Leptoloma cognatum. Plant, × ½; two views of spikelet, and floret, × 10. (Tracy 8223, Tex.)

Figure 85.--Fall witchgrass



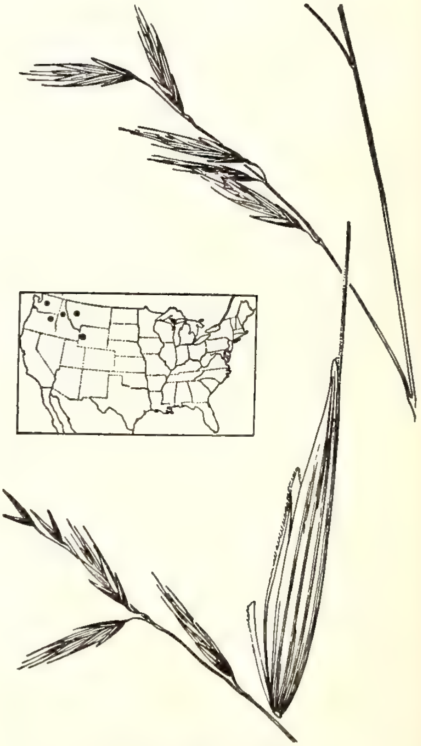
Melica nitens. Plant, × 1; floret, × 5. (McDonald 15, Ill.)

Figure 87.--Threeflower melic



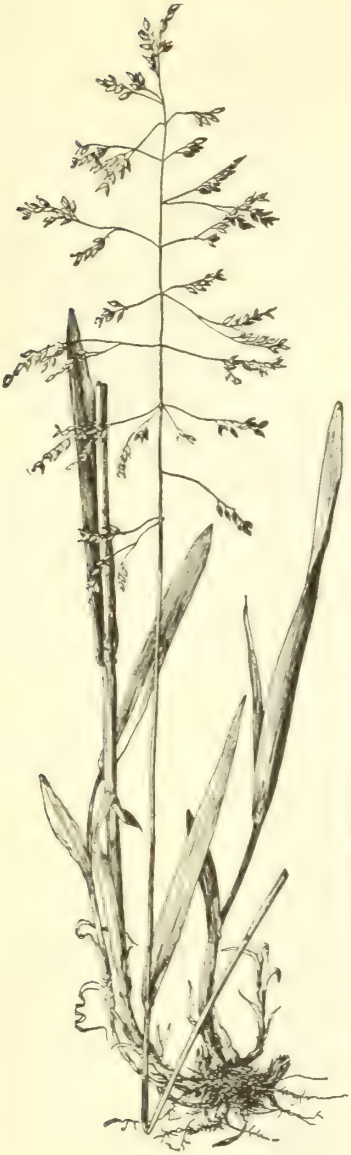
Melica mutica. Plant, × ½; spikelet and floret, × 5. (Chase 3695, Va.)

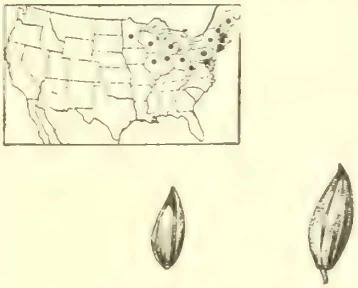
Figure 86.--Twoflower melic



Melica smithii. Panicle, × 1; floret, × 5. (Robbins, Mich.)

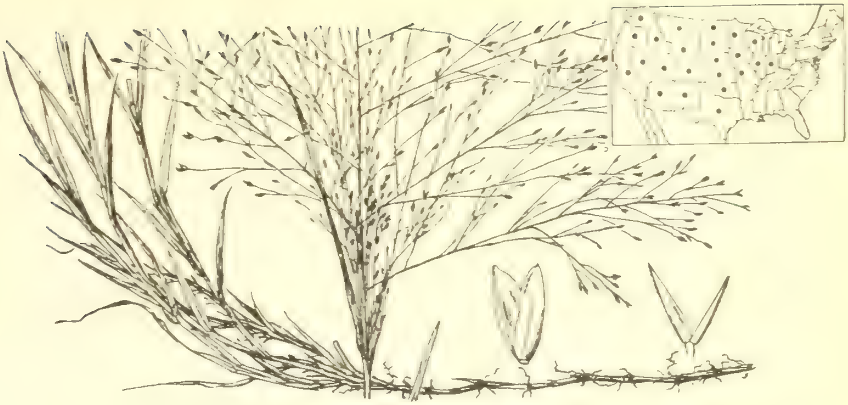
Figure 88.--Smith melic





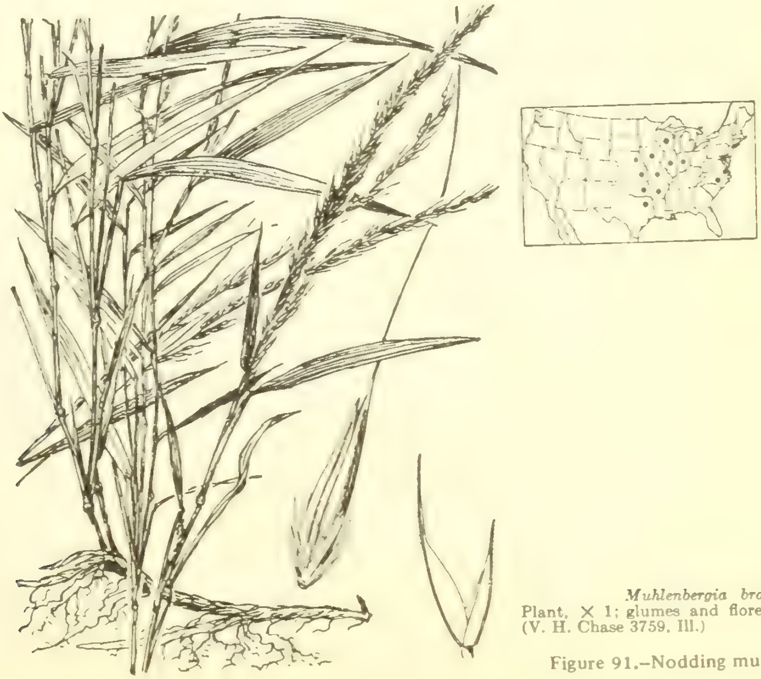
Milium effusum. Plant, × ½; spikelet and floret, × 5. (Phillips, Maine.)

Figure 89.–American milletgrass



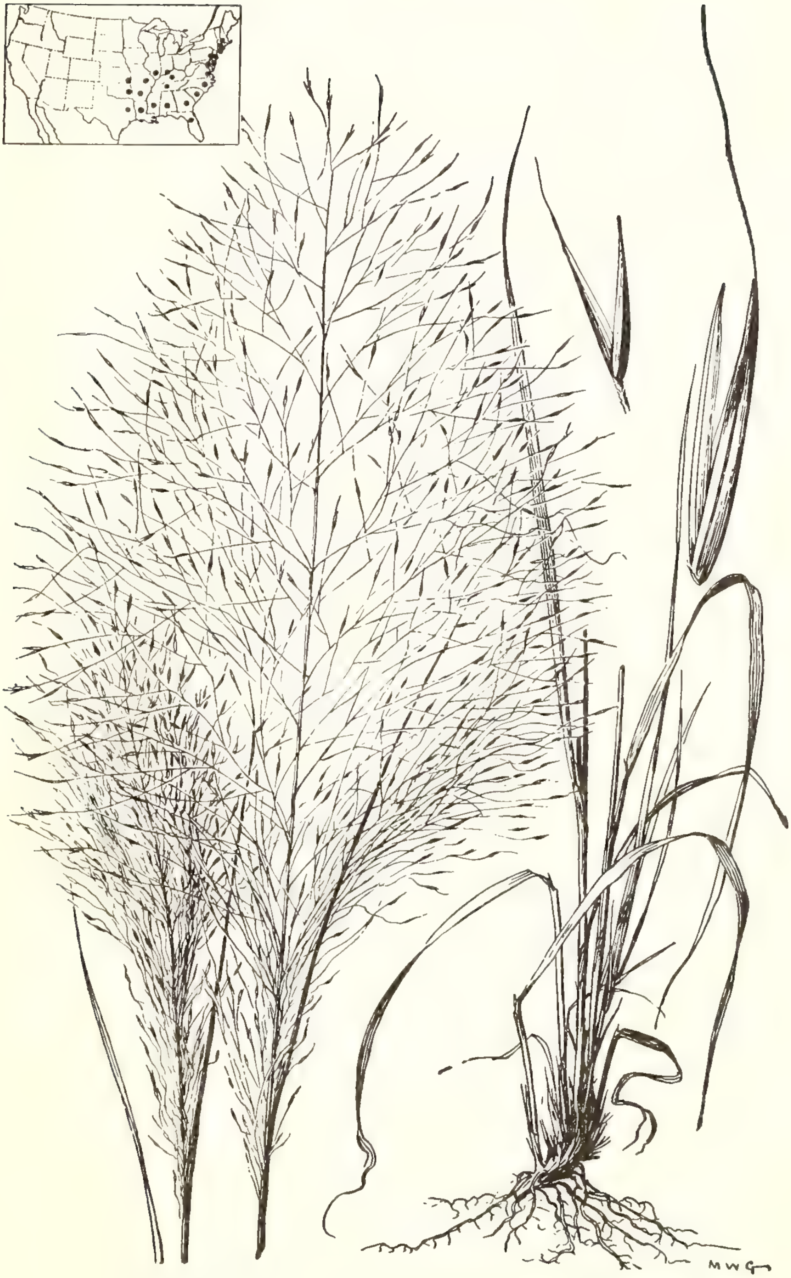
Muhlenbergia asperifolia. Plant, × 1; glumes and floret, × 10. (Griffiths 212, S. Dak.)

Figure 90.–Alkali muhly



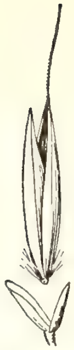
Muhlenbergia brachyphylla. Plant, × 1; glumes and florets, × 10. (V. H. Chase 3759, Ill.)

Figure 91.–Nodding muhly



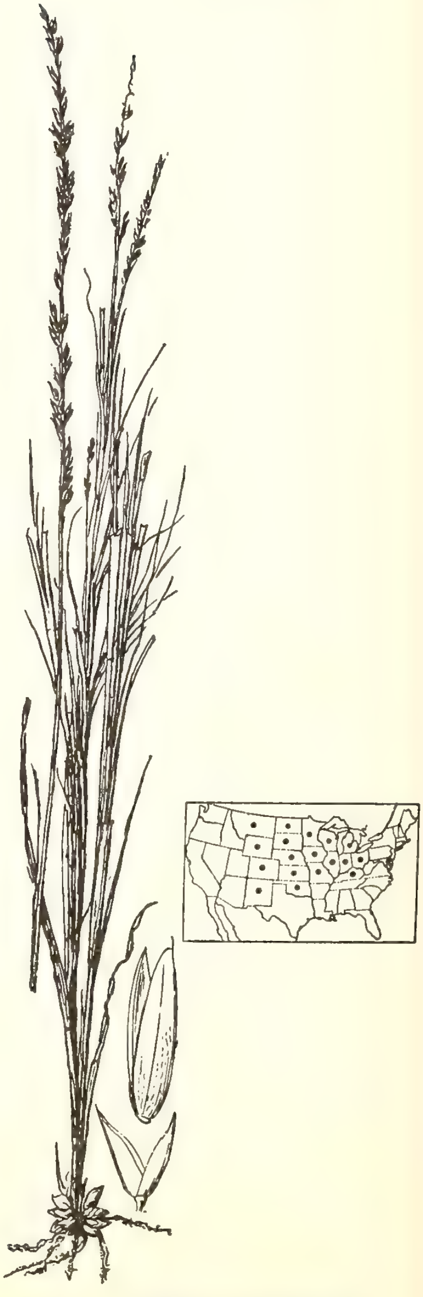
Muhlenbergia capillaris. Plant, × ½; glumes and floret, × 10. (Scribner, Tenn.)

Figure 92.--Hairawn muhly



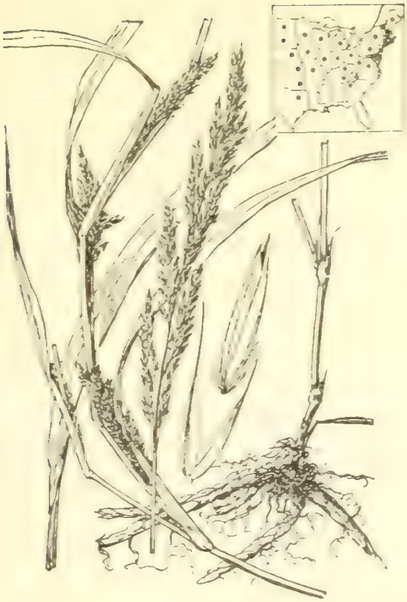
Muhlenbergia curtisetosa. Glumes and floret, × 10. (Wolf 30, Ill.)

Figure 93.--Illinois nimblewill



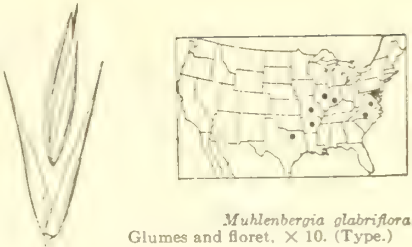
Muhlenbergia cuspidata. Plant, × 1; glumes and floret, × 10. (Crattv, Iowa.)

Figure 94.--Stonyhills muhly



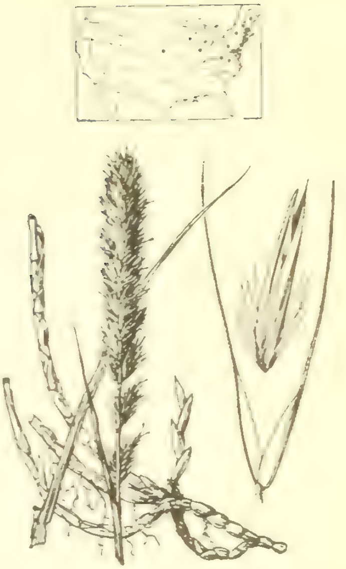
Muhlenbergia frondosa. Plant, × 1; glumes and floret, × 10. (V. H. Chase 1166, Ill.)

Figure 95.–[No standard common name]



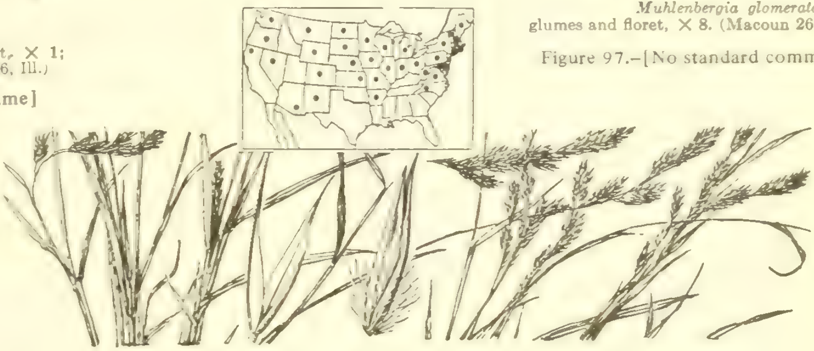
Muhlenbergia glabriflora. Glumes and floret, × 10. (Type.)

Figure 96.–Inland muhly



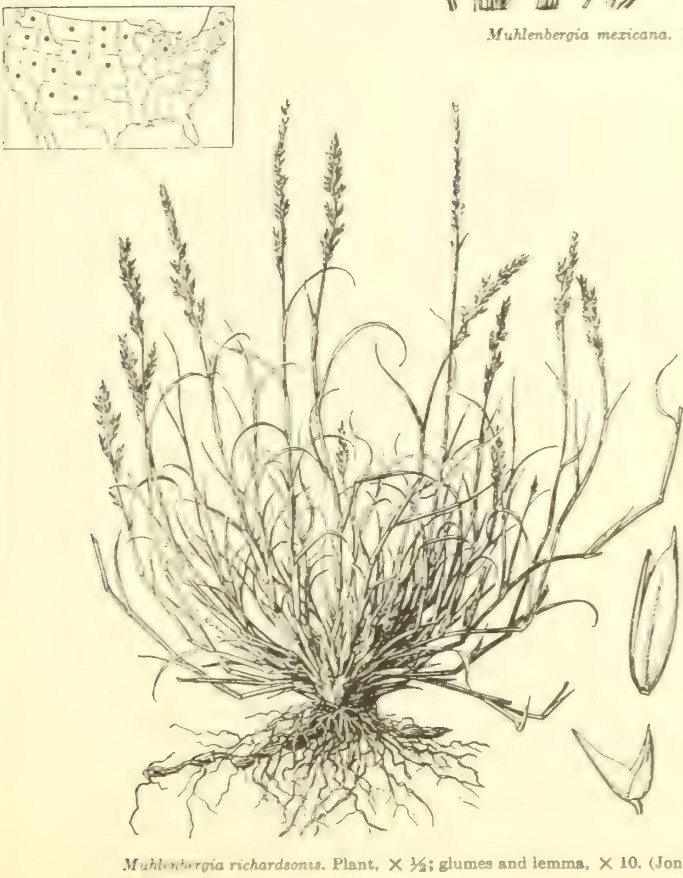
Muhlenbergia glomerata. Plant, × 1; glumes and floret, × 8. (Macoun 26241, Ontario.)

Figure 97.–[No standard common name]



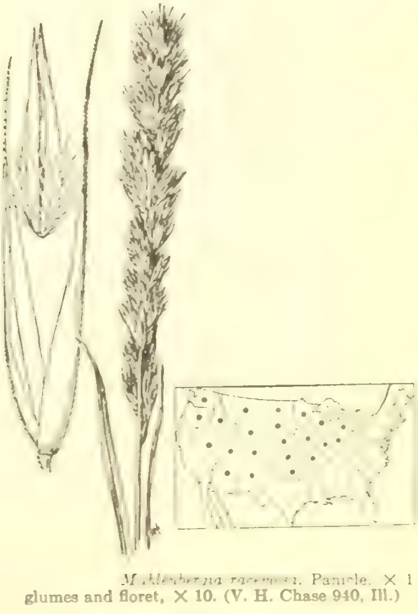
Muhlenbergia mexicana. Plant, × 1; glumes and floret, × 10. (Deam 19225, Ind.)

Figure 98.–Wirestem muhly



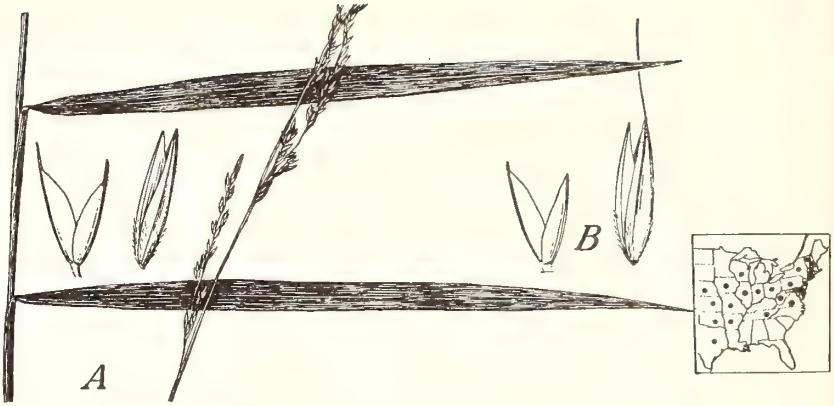
Muhlenbergia richardsonis. Plant, × ½; glumes and lemma, × 10. (Jones 5743, Utah.)

Figure 100.–Mat muhly



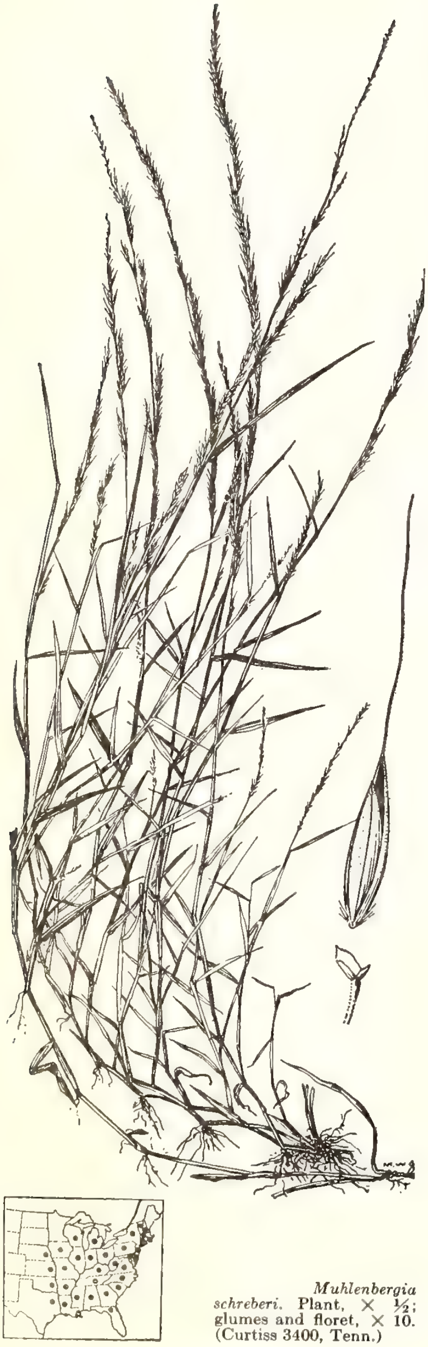
Muhlenbergia racemosa. Panicle, × 1; glumes and floret, × 10. (V. H. Chase 940, Ill.)

Figure 99.–Green muhly



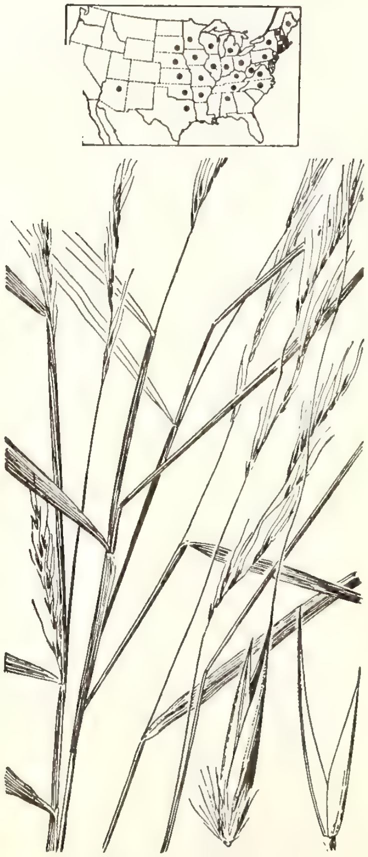
A, *Muhlenbergia sobolifera.* Plant, × 1; glumes and floret, × 10. (Metcalf 1589, N. Y.)
B, Var. *setigera*, × 10. (Reverchon 1049, Tex.)

Figure 102.--Rock muhly



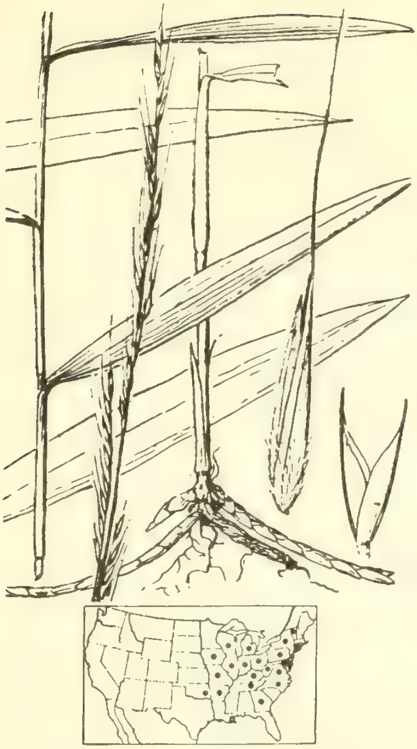
Muhlenbergia schreberi. Plant, × ½; glumes and floret, × 10. (Curtiss 3400, Tenn.)

Figure 101.--Nimblewill



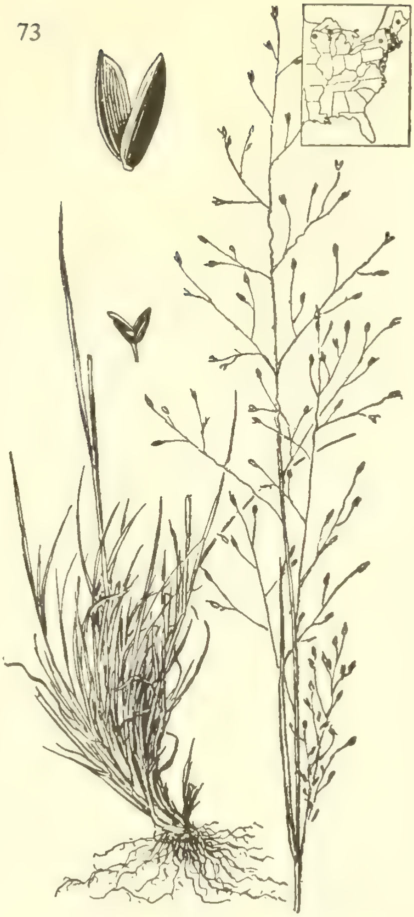
Muhlenbergia sylvatica. Plant, × 1; glumes and floret, × 10. (Conant, Mass.)

Figure 103.--Forest muhly



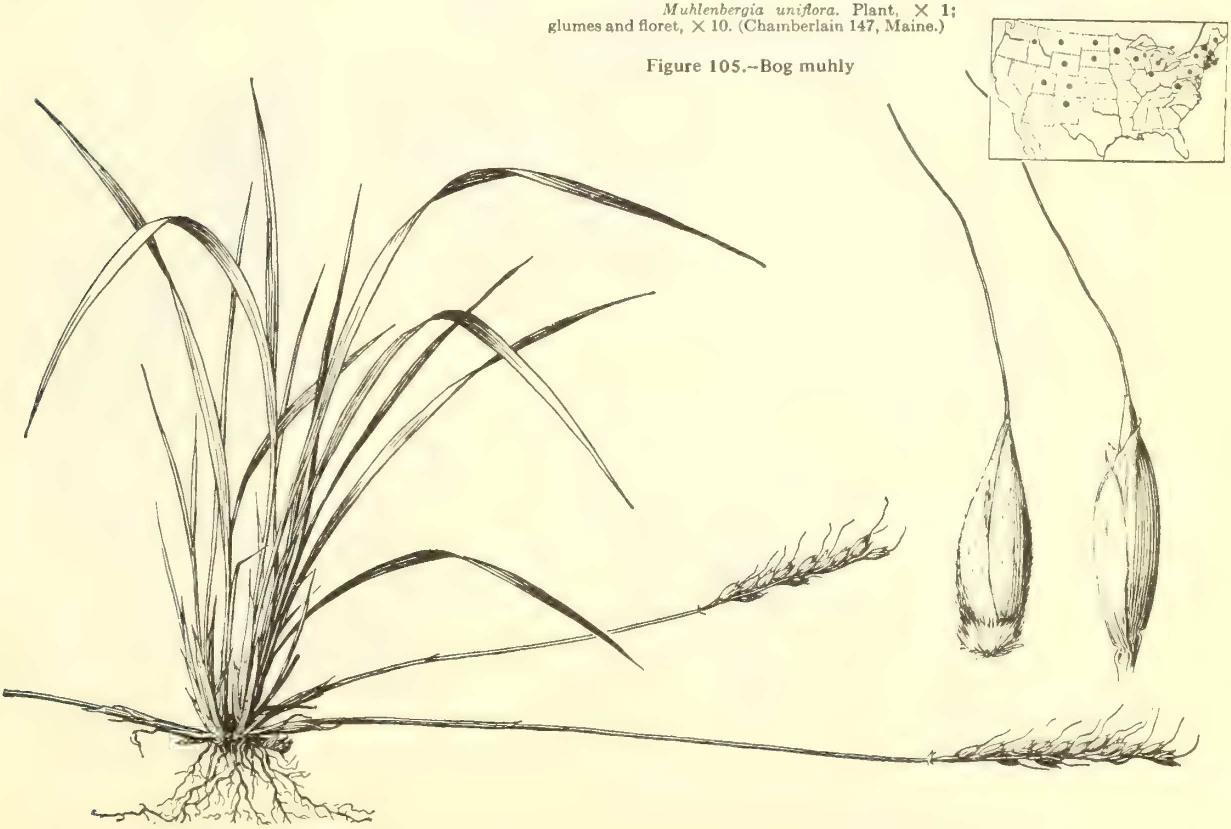
Muhlenbergia tenuiflora. Plant, × 1; glumes and floret, × 10. (Mosley, Ohio.)

Figure 104.–Slimflower muhly



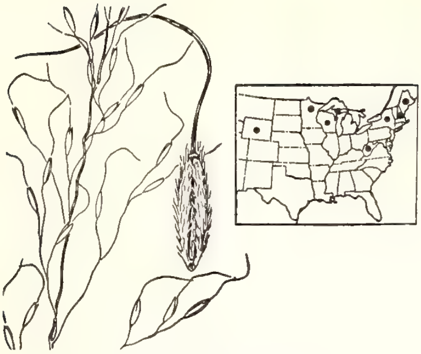
Muhlenbergia uniflora. Plant, × 1; glumes and floret, × 10. (Chamberlain 147, Maine.)

Figure 105.–Bog muhly



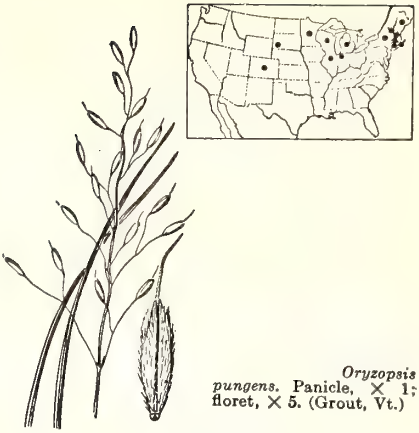
Oryzopsis asperifolia. Plant, × ½; spikelet and floret, × 5. (Amer. Gr. Natl. Herb. 834, N. Y.)

Figure 106.–Roughleaf ricegrass



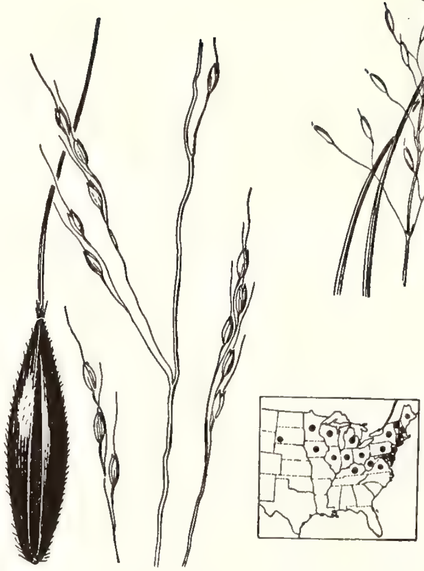
Oryzopsis canadensis. Panicle, × 1; floret, × 5. (Rand, Maine.)

Figure 107.--Canada ricegrass



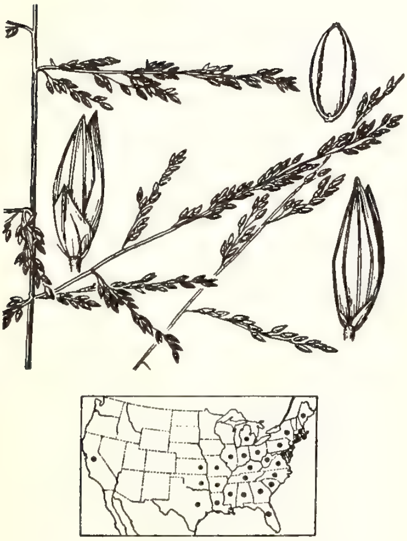
Oryzopsis pungens. Panicle, × 1; floret, × 5. (Grout, Vt.)

Figure 108.--Shorthorn ricegrass



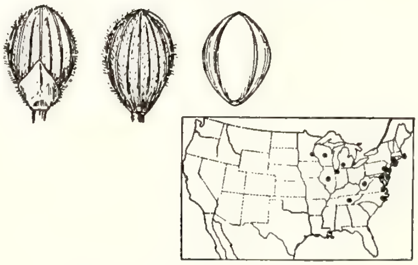
Oryzopsis racemosa. Panicle, × ½; floret, × 5. (Sartwell, N. Y.)

Figure 109.--Blackseed ricegrass



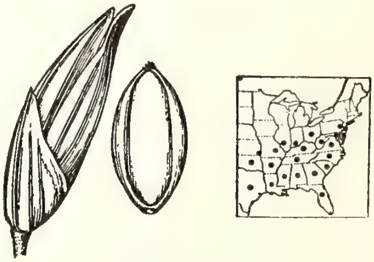
Panicum agrostoides. Panicle, × 1; two views of spikelet, and floret, × 10. (Fisher 30, N. J.)

Figure 110.--Redtop panicum



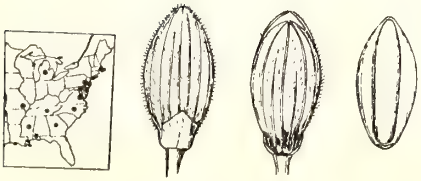
Panicum albemarlense. Two views of spikelet, and floret, × 10. (Type.)

Figure 111.--[No standard common name]



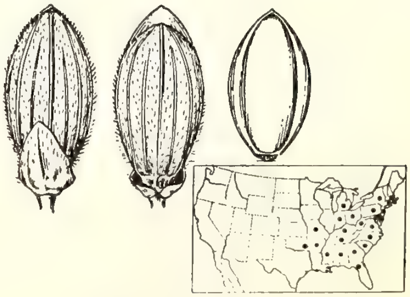
Panicum anceps. Spikelet and floret, × 10. (Type.)

Figure 112.--Beaked panicum



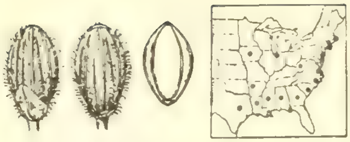
Panicum annulum. Two views of spikelet, and floret, × 10. (Type.)

Figure 113.--[No standard common name]



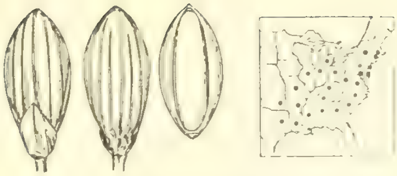
Panicum ashei. Two views of spikelet, and floret, × 10. (Type coll.)

Figure 114.--Ashe panicum



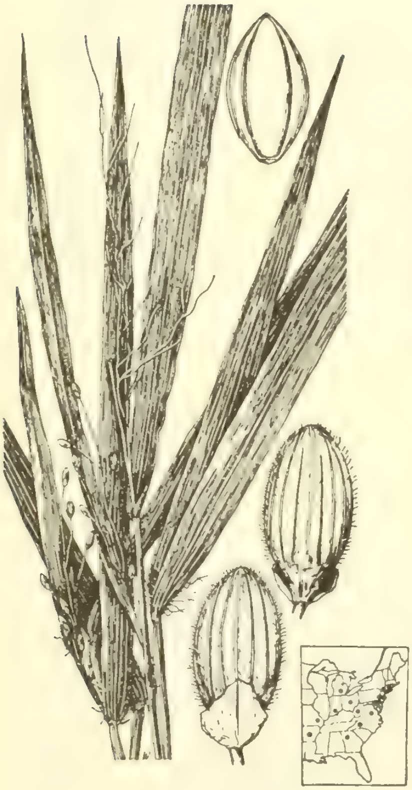
Panicum auburne. Two views of spikelet, and floret, × 10. (Type.)

Figure 115.–[No standard common name]



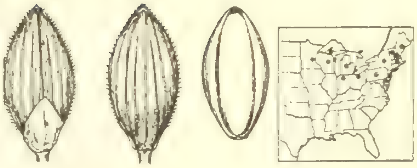
Panicum barbulatum. Two views of spikelet, and floret, × 10. (Type.)

Figure 116.–[No standard common name]



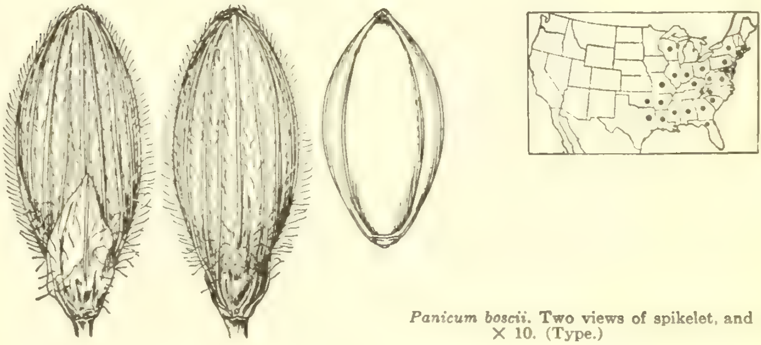
Panicum bicknellii. Plant, × 1; two views of spikelet, and floret, × 10. (Porter, Pa.)

Figure 117.–Bicknell panicum



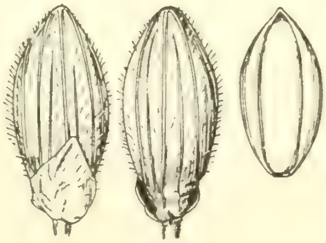
Panicum boreale. Two views of spikelet, and floret, × 10. (Type.)

Figure 118.–[No standard common name]



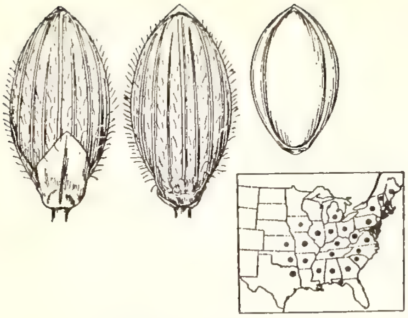
Panicum boscii. Two views of spikelet, and floret, × 10. (Type.)

Figure 119.–[No standard common name]



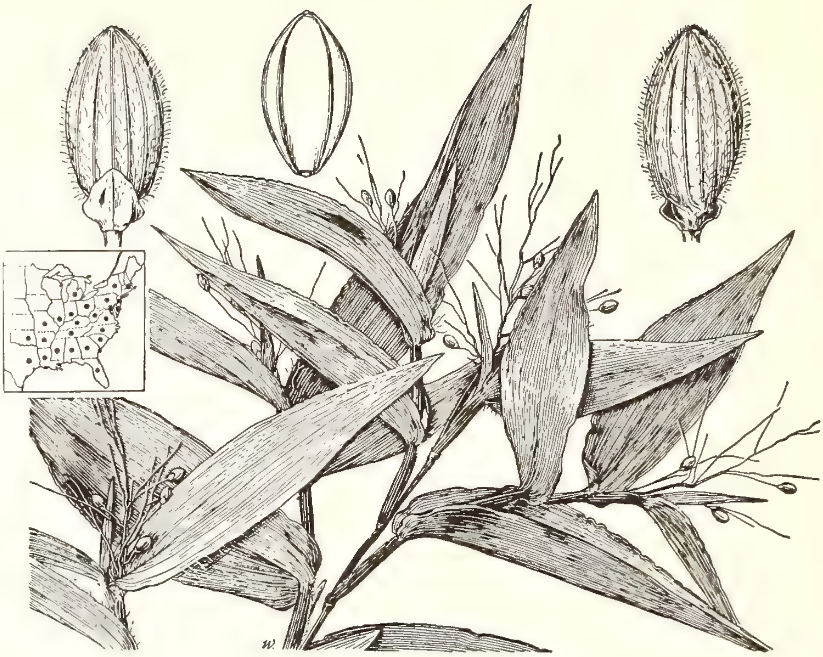
Panicum calliphyllum. Two views of spikelet, and floret, × 10. (Type.)

Figure 120.–[No standard common name]



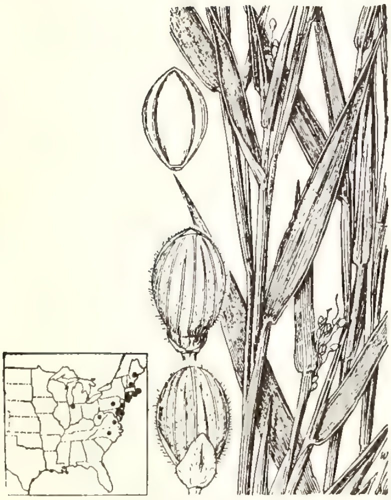
Panicum clandestinum. Two views of spikelet, and floret, × 10. (Torrey, N. Y.)

Figure 121.--[No standard common name]



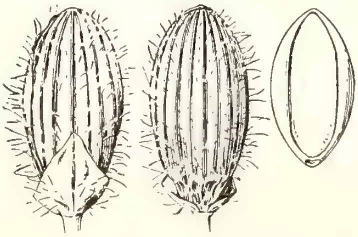
Panicum commutatum. Plant, × 1; two views of spikelet, and floret, × 10. (Bock and Chase 118, Ill.)

Figure 123.–[No standard common name]



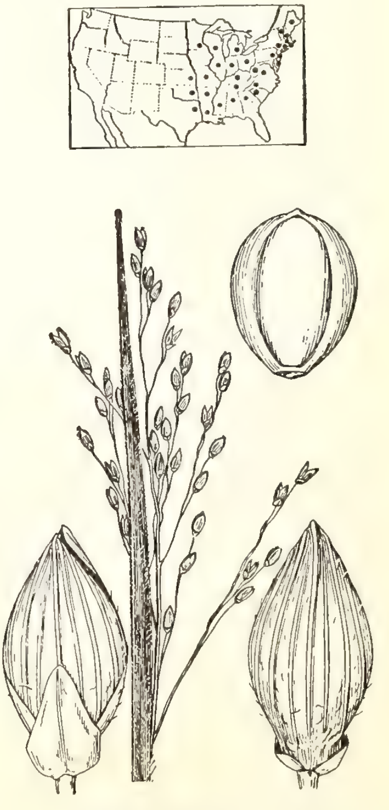
Panicum columbianum. Plant, × 1; two views of spikelet, and floret, × 10. (Type.)

Figure 122.–[No standard common name]



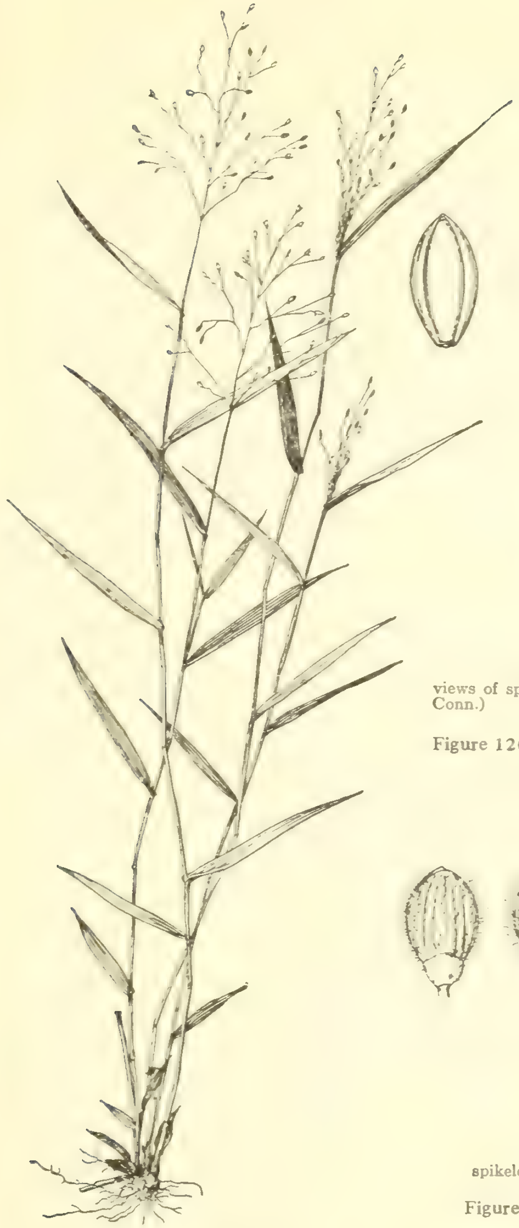
Panicum deamii. Two views of spikelet, and floret, × 10. (Type.)

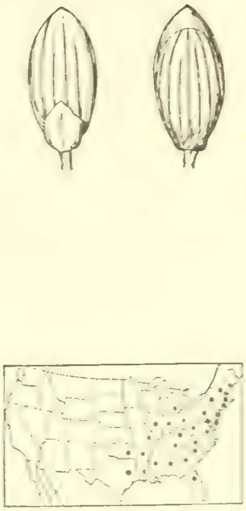
Figure 124.–Deam panicum



Panicum depauperatum. Panicle, × 1; two views of spikelet, and floret, × 10. (Amer. Gr. Natl. Herb. 78, D. C.)

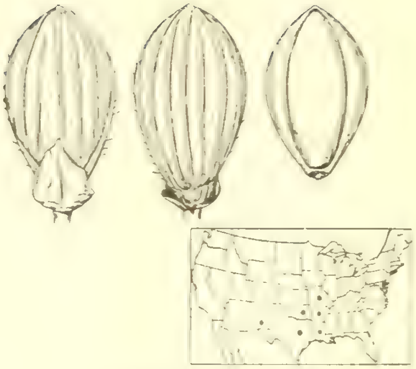
Figure 125.–[No standard common name]





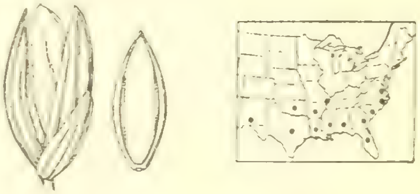
Panicum dichotomum. Plant, × ½; two views of spikelet, and floret, × 10. (Bissell 5576, Conn.)

Figure 126.–[No standard common name]



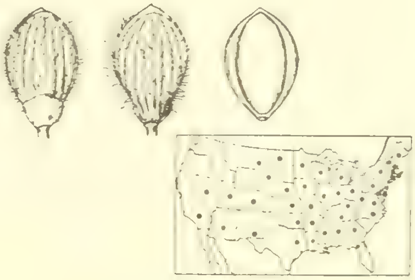
Panicum helleri. Two views of spikelet, and floret, × 10. (Type.)

Figure 127.–Heller panicum



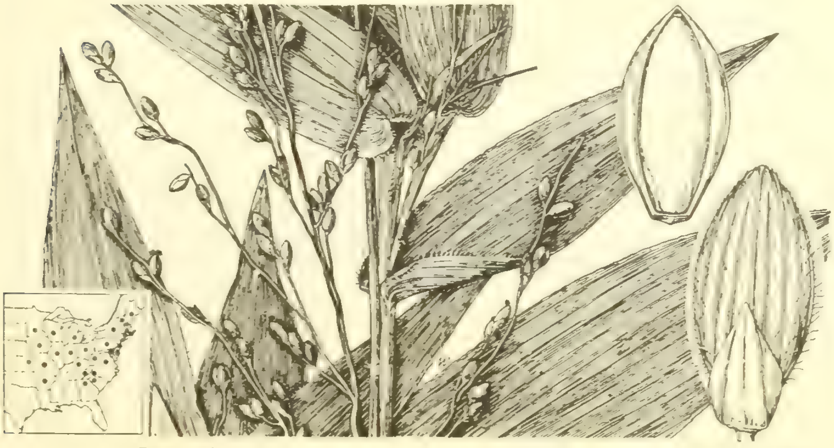
Panicum hians. Spikelet and floret, × 10. (Type.)

Figure 128.–Gaping panicum



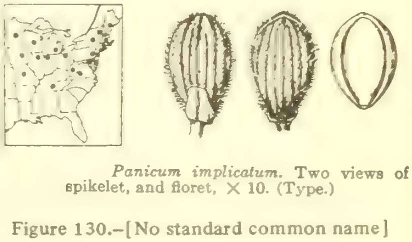
Panicum huachucae. Two views of spikelet, and floret, × 10. (Type.)

Figure 129.–Huachuca panicum



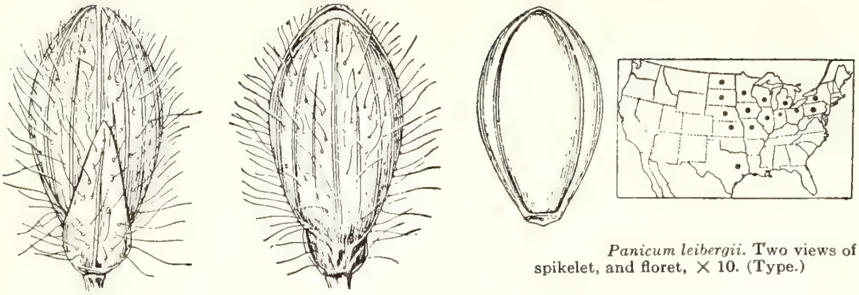
Panicum latifolium. Plant, × 1; two views of spikelet, and floret, × 10. (Schenck, Ill.)

Figure 131.–[No standard common name]



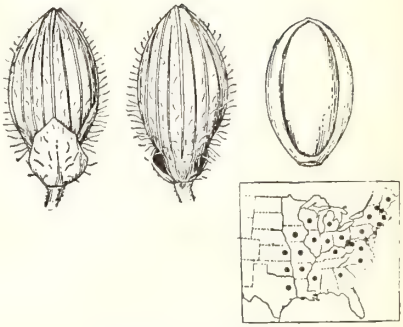
Panicum implicatum. Two views of spikelet, and floret, × 10. (Type.)

Figure 130.–[No standard common name]



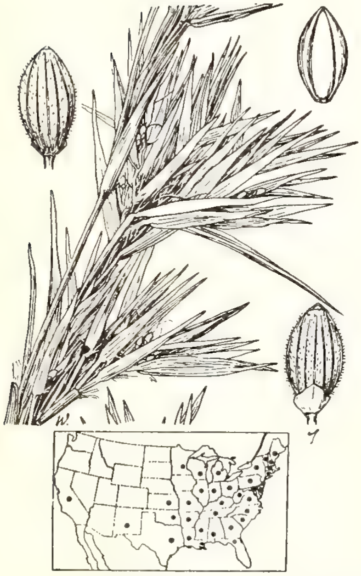
Panicum leibergii. Two views of spikelet, and floret, × 10. (Type.)

Figure 132.–Leiberg panicum



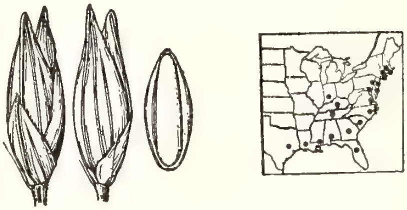
Panicum linearifolium. Two views of spikelet, and floret, × 10. (Type.)

Figure 134.–Slimleaf panicum



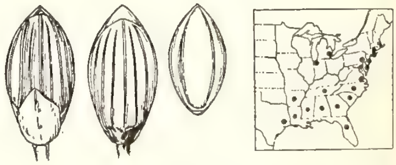
Panicum lindheimeri. Plant, × 1; two views of spikelet, and floret, × 10. (Chase 4449, Miss.)

Figure 133.–Lindheimer panicum



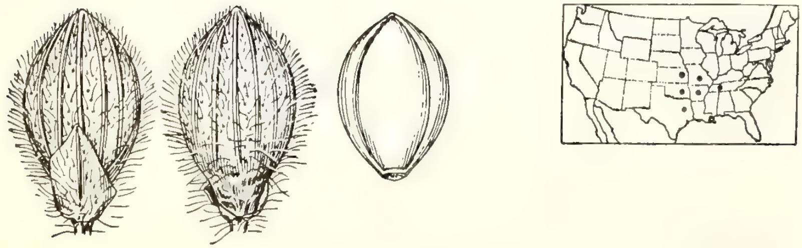
Panicum longifolium. Two views of spikelet, and floret, × 10. (Type.)

Figure 135.–Longleaf panicum



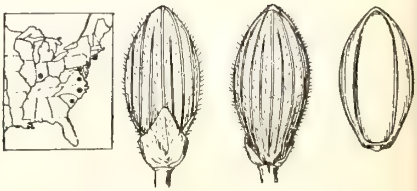
Panicum lucidum. Two views of spikelet, and floret, × 10. (Type.)

Figure 136.–[No standard common name]



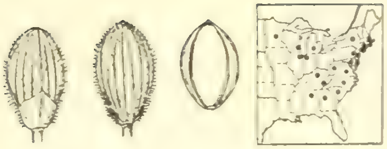
Panicum malacophyllum. Two views of spikelet, and floret, × 10. (Type.)

Figure 137.–Softleaf panicum



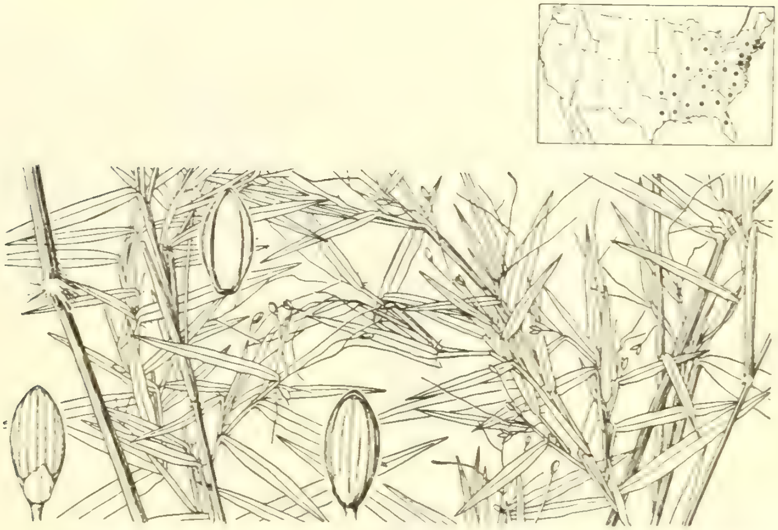
Panicum mattamuskeetense. Two views of spikelet, and floret, × 10. (Type coll.)

Figure 138.–[No standard common name]



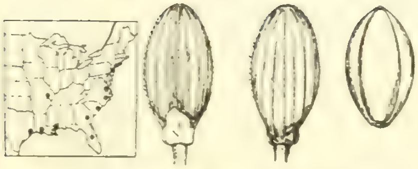
Panicum meridionale. Two views of spikelet, and floret, × 10. (Type.)

Figure 139.–[No standard common name]



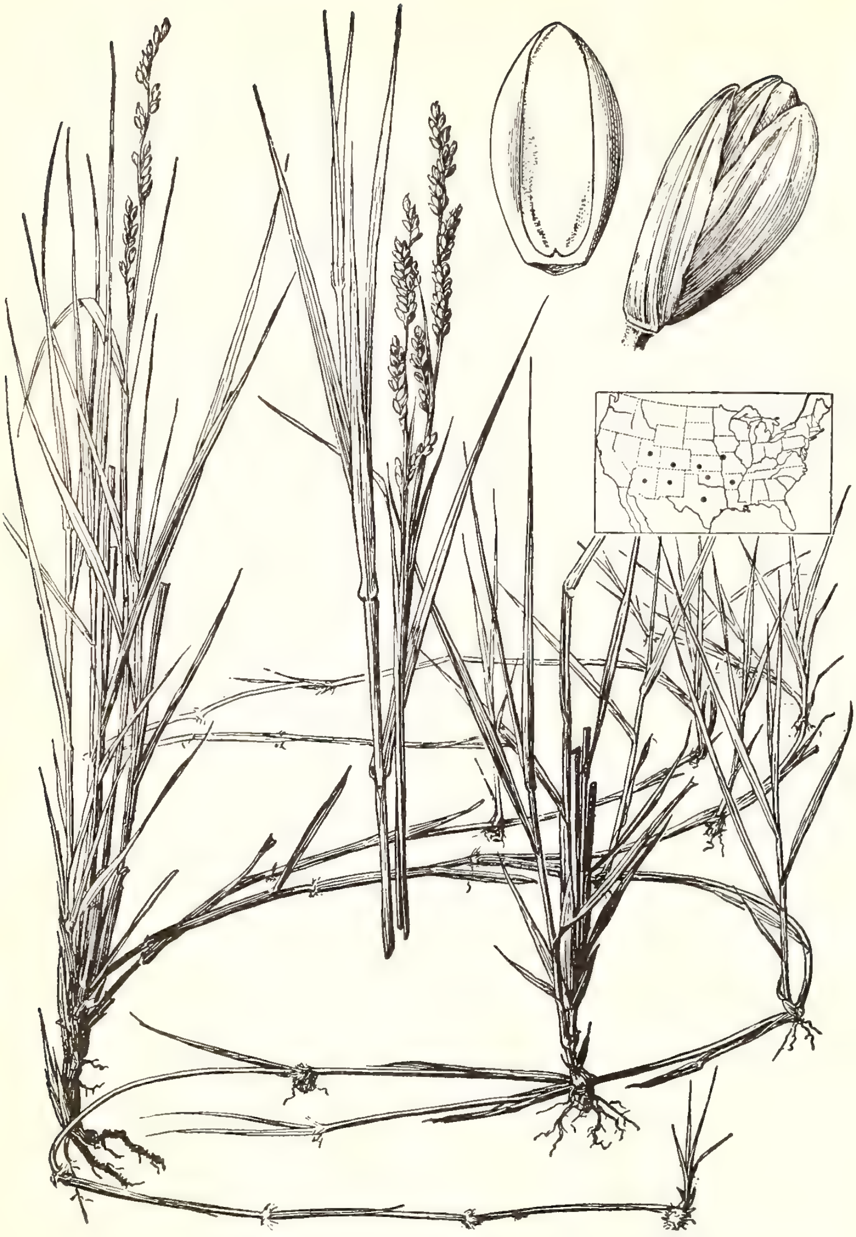
Panicum microcarpon. Plant, × 1; two views of spikelet, and floret, × 10. (Maxon and Standley 86, Md.)

Figure 140.–[No standard common name]



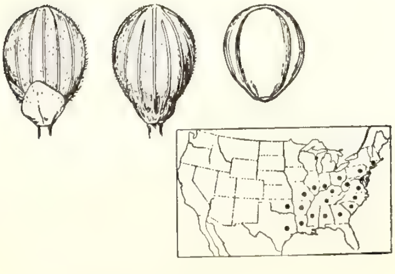
Panicum nitidum. Two views of spikelet, and floret, × 10. (Type.)

Figure 141.–[No standard common name]



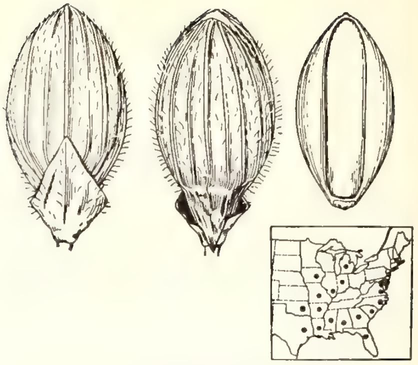
Panicum obtusum. Plant, × ½; spikelet and floret, × 10. (Hitchcock 13412, Tex.)

Figure 142.–Vine-mesquite



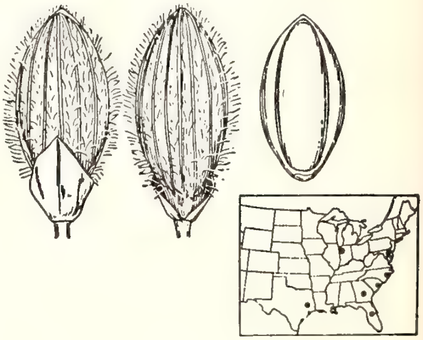
Panicum polyanthes. Two views of spikelet, and floret, × 10. (Type.)

Figure 146.–[No standard common name]



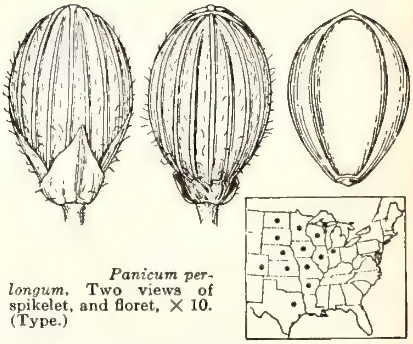
Panicum oligosanthes. Two views of spikelet, and floret, × 10. (Type.)

Figure 143.–[No standard common name]



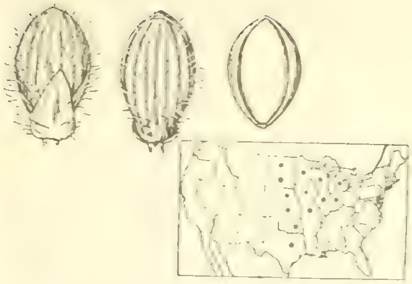
Panicum ovale. Two views of spikelet, and floret, × 10. (Type.)

Figure 144.–[No standard common name]



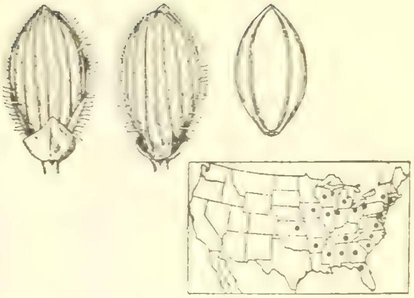
Panicum perlongum. Two views of spikelet, and floret, × 10. (Type.)

Figure 145.–[No standard common name]



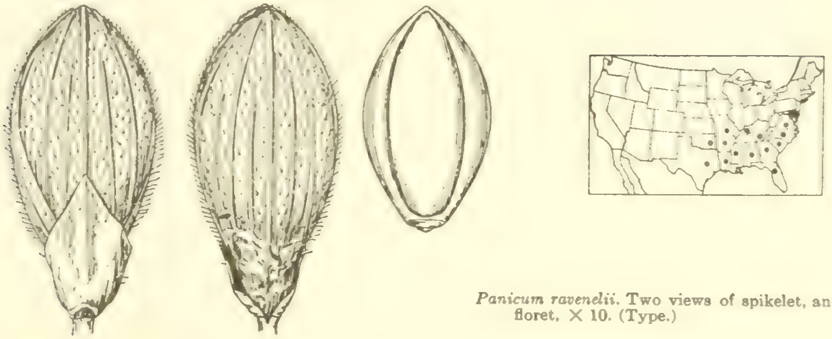
Panicum praecocius. Two views of spikelet, and floret, × 10. (Type.)

Figure 147.–[No standard common name]



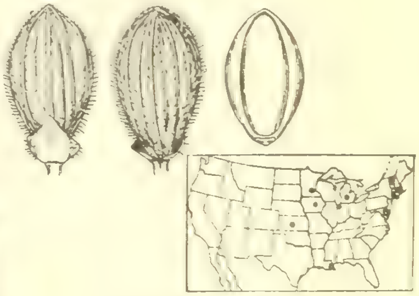
Panicum pseudopubescens. Two views of spikelet, and floret, × 10. (Type.)

Figure 148.–[No standard common name]



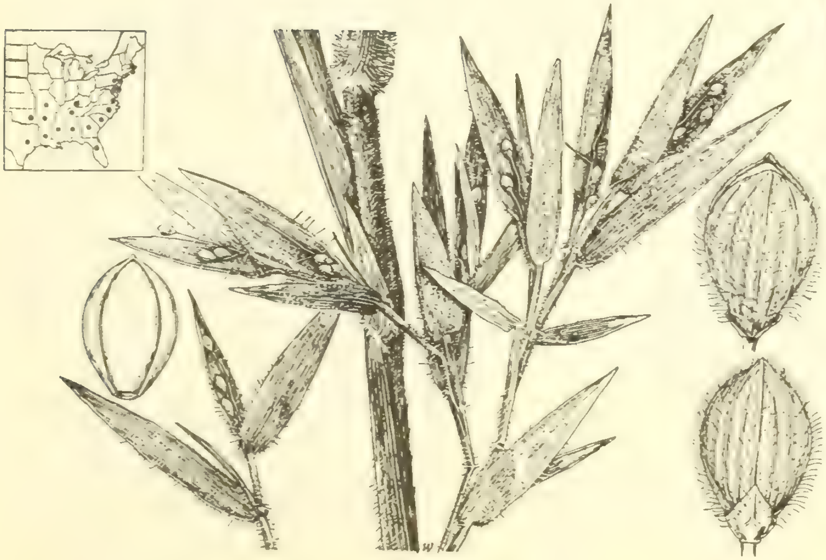
Panicum ravenelii. Two views of spikelet, and floret, × 10. (Type.)

Figure 149.–[No standard common name]



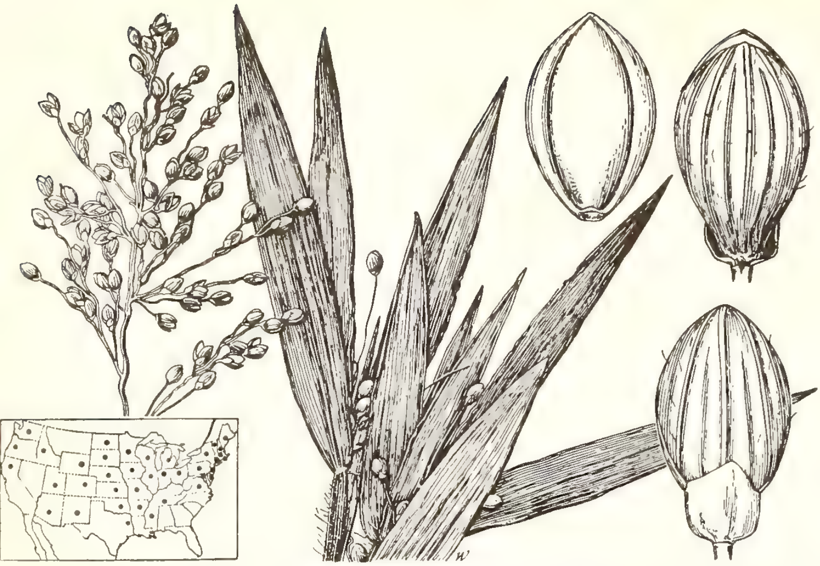
Panicum scoparioides. Two views of spikelet, and floret, × 10. (Type.)

Figure 150.–[No standard common name]



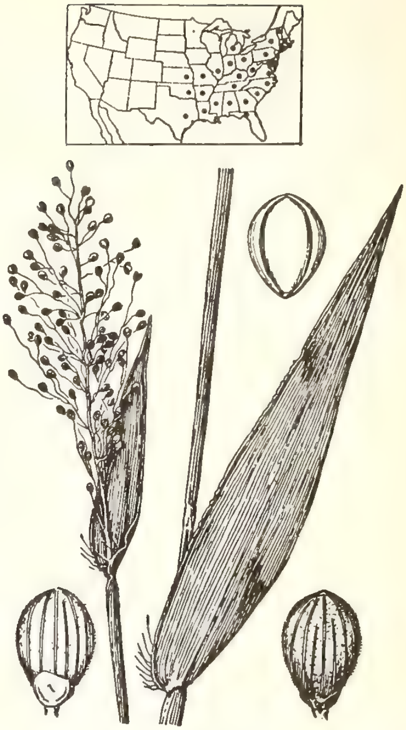
Panicum scoparium. Plant, × 1; two views of spikelet, and floret, × 10. (McGregor 212, S. C.)

Figure 151.–Velvet panicum



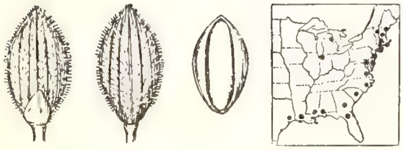
Panicum scribnerianum. Plant, × 1; two views of spikelet, and floret, × 10. (Vernal phase, McDonald 32, Ill.; autumnal phase, Umbach 2365, Ill.)

Figure 152.--Scribner panicum



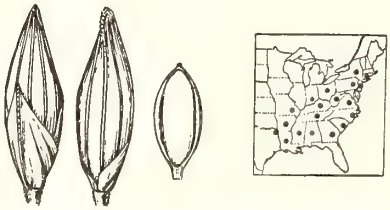
Panicum sphaerocarpon. Plant, × 1; two views of spikelet, and floret, × 10. (Deam, Ind.)

Figure 153.–Roundseed panicum



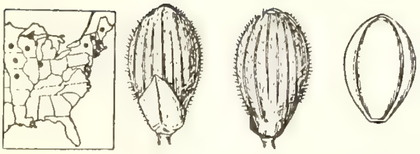
Panicum spretum. Two views of spikelet, and floret, × 10. (Type.)

Figure 154.–[No standard common name]



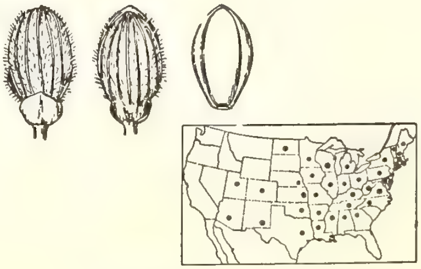
Panicum stipitatum. Two views of spikelet, and floret, × 10. (Commons 305, Del.)

Figure 155.–Purple panicum



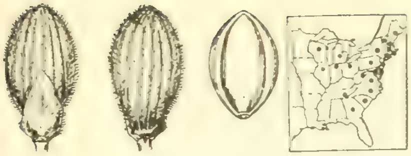
Panicum subvillosum. Two views of spikelet, and floret, × 10. (Type.)

Figure 156.--[No standard common name]



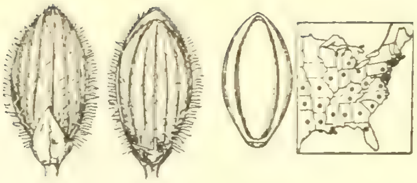
Panicum tennesseense. Two views of spikelet, and floret, × 10. (Type.)

Figure 157.--Tennessee panicum



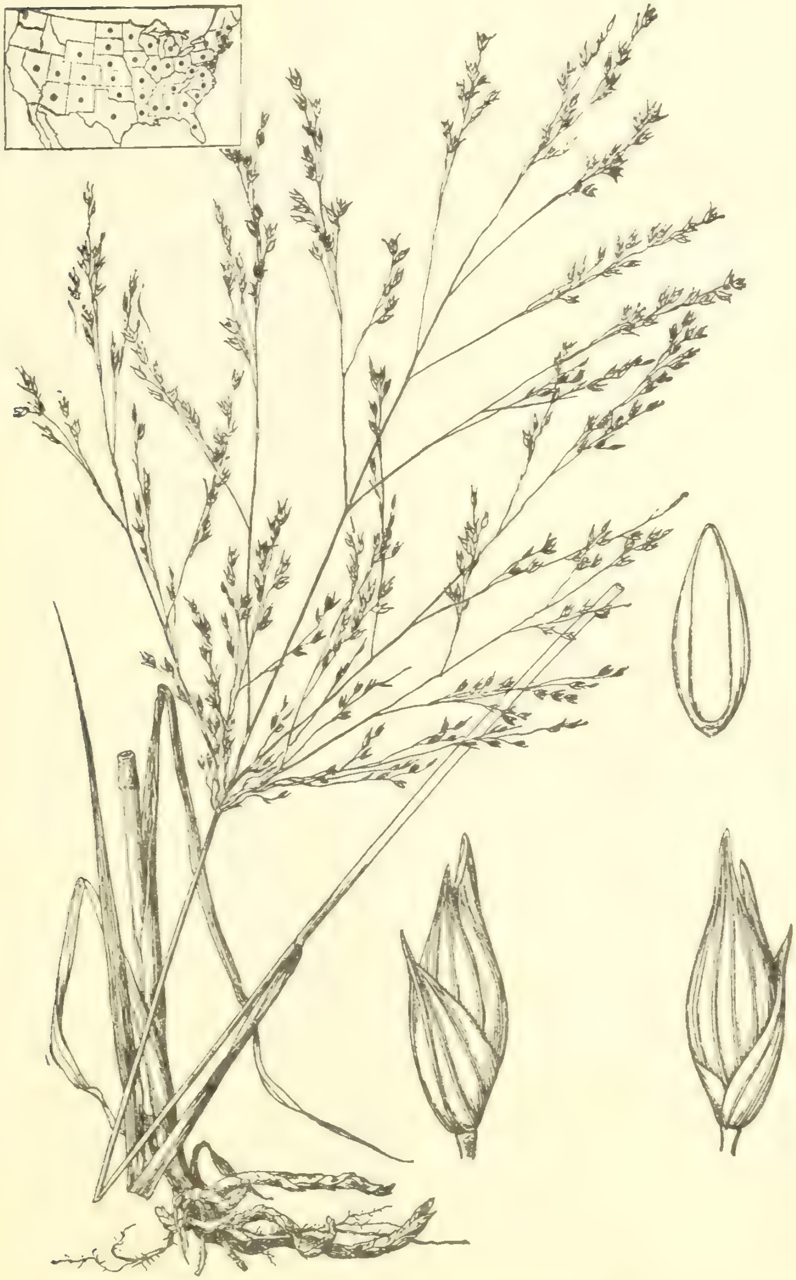
Panicum tsugetorum. Two views of spikelet, and floret, × 10. (Type.)

Figure 158.–Hemlock panicum



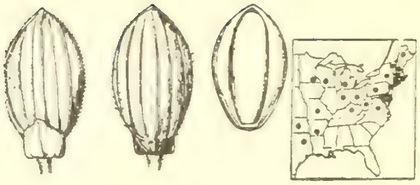
Panicum villosissimum. Two views of spikelet, and floret, × 10. (Type.)

Figure 159.–[No standard common name]



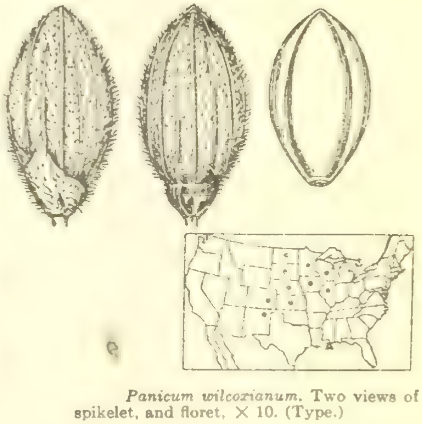
Panicum virgatum. Plant, × ½; two views of spikelet, and floret, × 10. (V. H. Chase, Ill.)

Figure 160.–Switchgrass



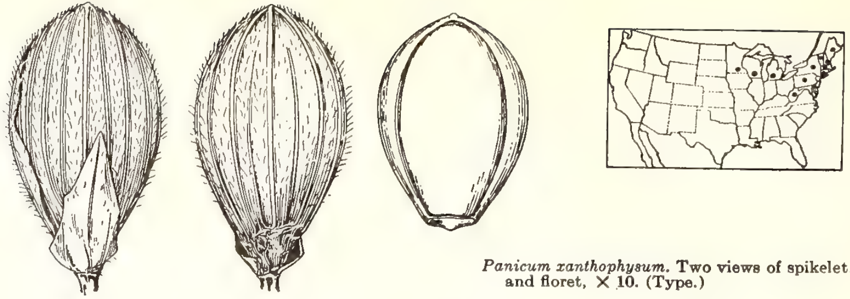
Panicum werneri. Two views of spikelet, and floret, × 10. (Type.)

Figure 161.–Werner panicum



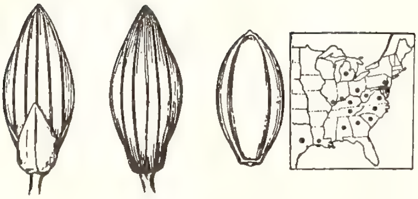
Panicum wilcoxianum. Two views of spikelet, and floret, × 10. (Type.)

Figure 162.–Wilcox panicum



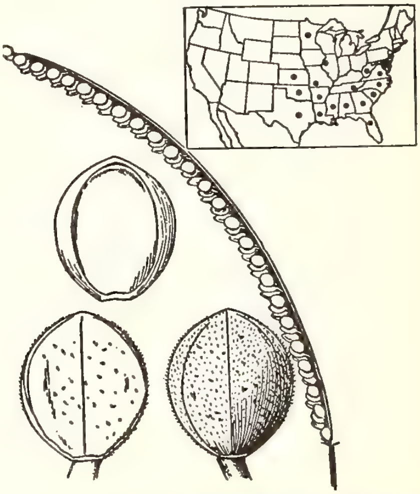
Panicum xanthophysum. Two views of spikelet, and floret, × 10. (Type.)

Figure 163.–[No standard common name]



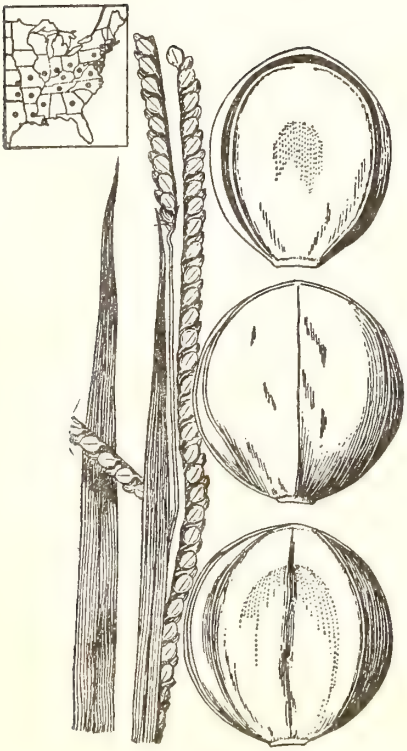
Panicum yadkinense. Two views of spikelet, and floret, × 10. (Type coll.)

Figure 164.–[No standard common name]



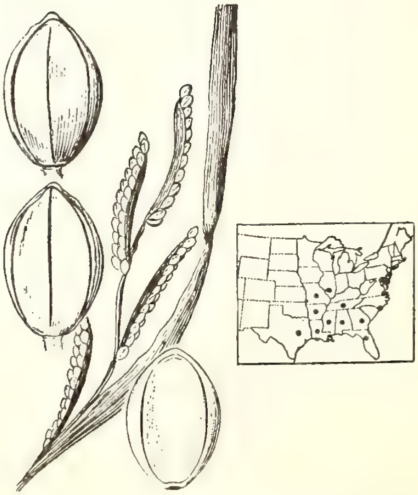
***Paspalum ciliatifolium*. Raceme, × 1; two views of spikelet, and floret, × 10. (Nash 1426, Fla.)**

Figure 165.–Fringeleaf paspalum



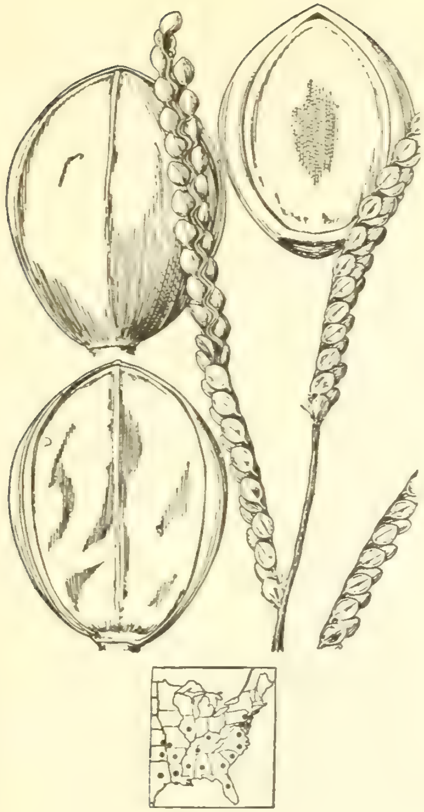
Paspalum circulare. Panicle, × 1; two views of spikelet, and floret, × 10. (Chase 3836, Md.)

Figure 166.–Roundseed paspalum



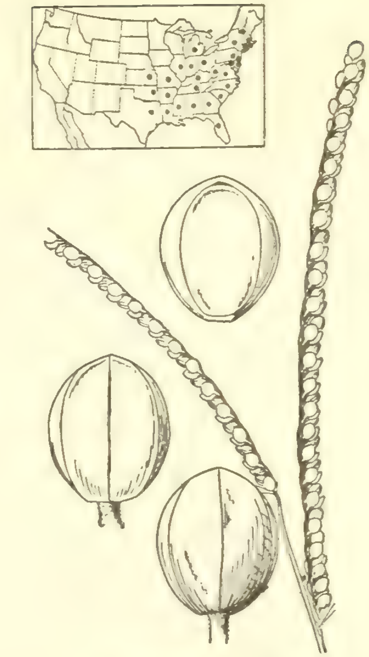
Paspalum dissectum. Panicle, × 1; two views of spikelet, and floret, × 10. (Commons 85, Del.)

Figure 167.–Mudbank paspalum



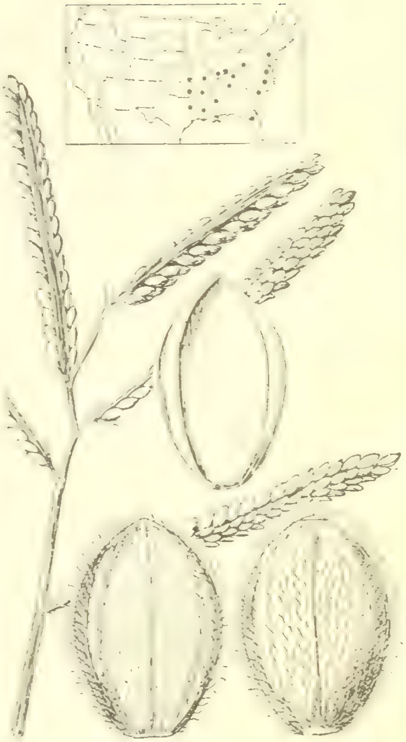
Paspalum floridanum. Panicle, × 1; two views of spikelet, and floret, × 10. (Chase 4221, Fla.)

Figure 168.--Florida paspalum



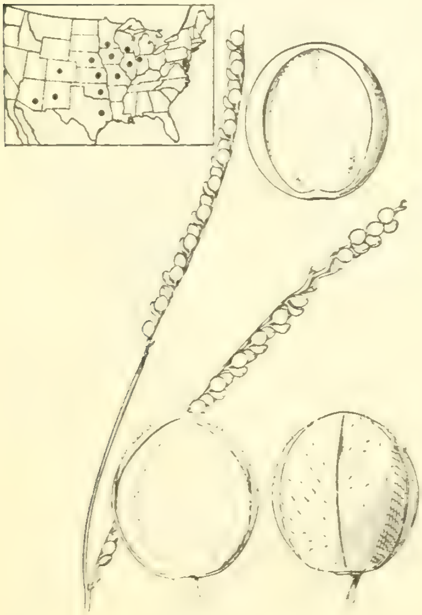
Paspalum pubescens. Panicle, × 1; two views of spikelet, and floret, × 10. (Hitchcock 298, Ga.)

Figure 169.--Hurrahgrass



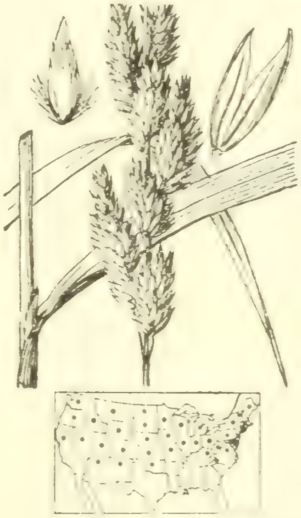
Paspalum pubiflorum. Panicle, × 1; two views of spikelet, and floret, × 10. (Hitchcock 5555, Mex.)

Figure 170.--Hairyseed paspalum



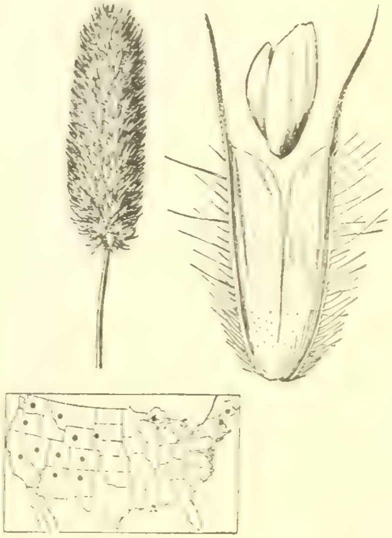
Paspalum stramineum. Panicle, × 1; two views of spikelet, and floret, × 10. (Type.)

Figure 171.--Sand paspalum



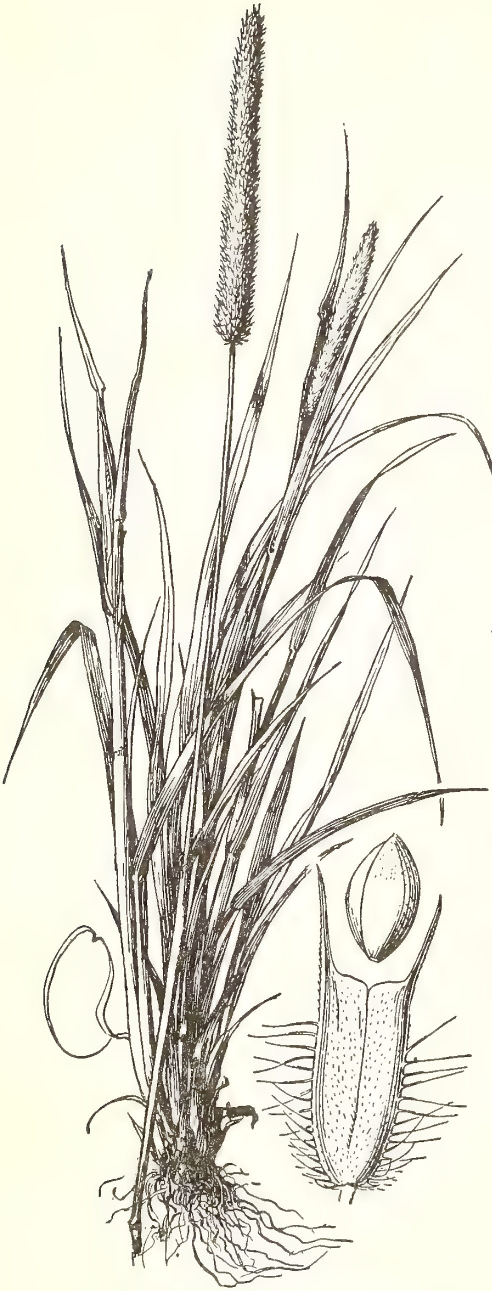
Phalaris arundinacea. Plant, × 1; glumes and floret, × 4. (Chase 7583, Md.)

Figure 172.--Reed canarygrass



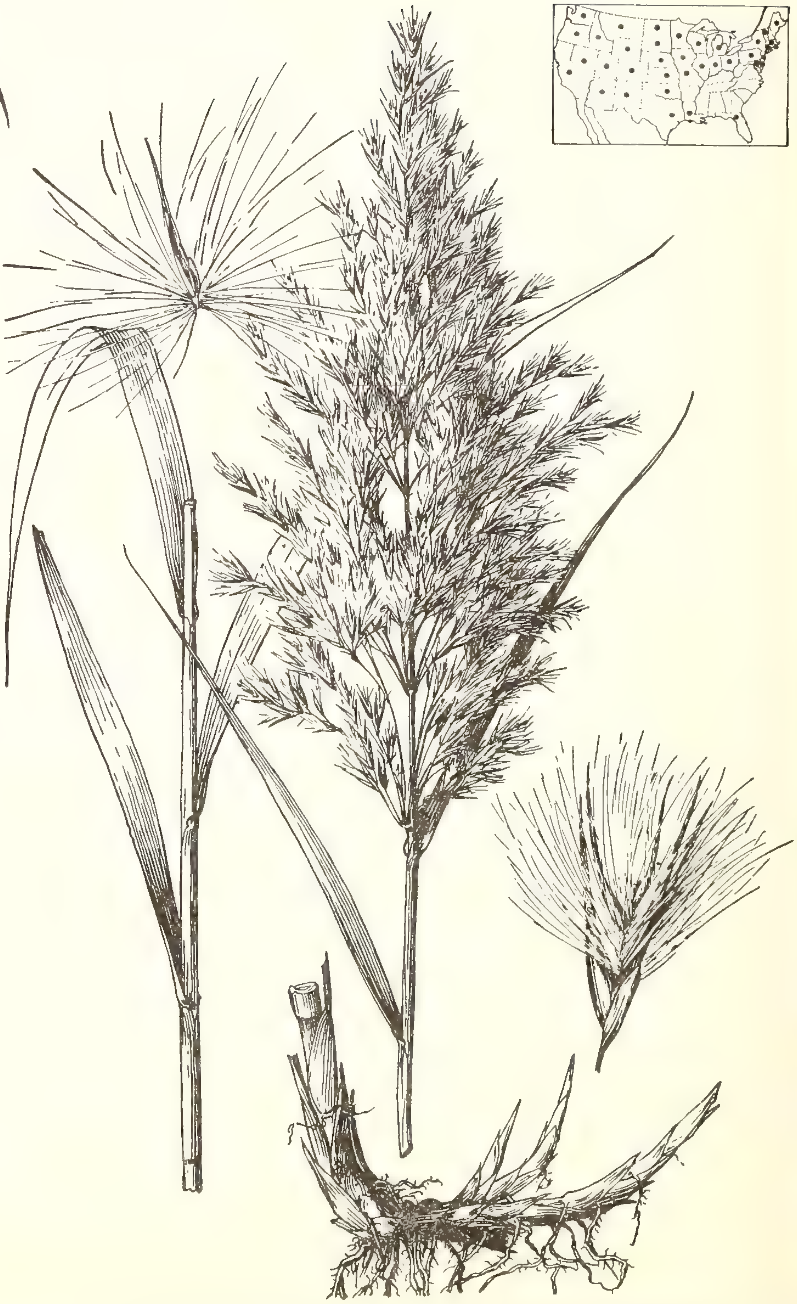
Phleum alpinum. Panicle, × 1; glumes and floret, × 10. (Clements 337, Colo.)

Figure 173.--Alpine timothy



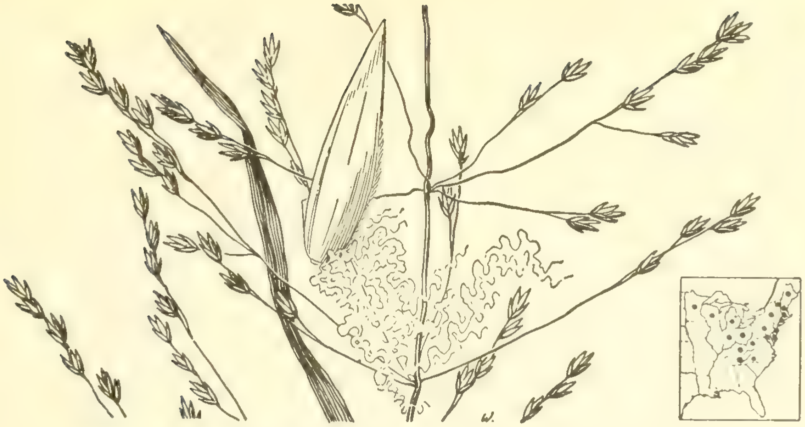
Phleum pratense. Plant, × ½; glumes and floret, × 10. (Mearns 2209, Wyo.)

Figure 173a.--Timothy (exotic)



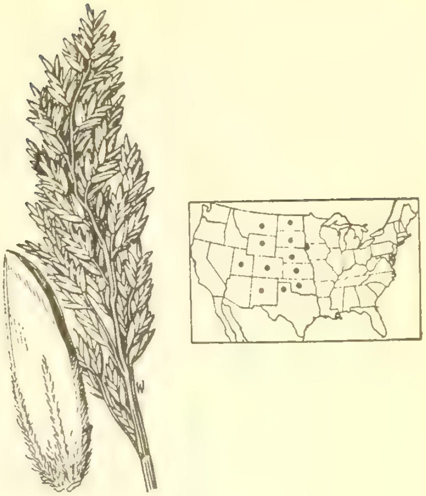
Phragmites communis. Plant, × 1/3; spikelet and floret, × 3. (Hitchcock 5078, N. Dak.)

Figure 174.--Common reed



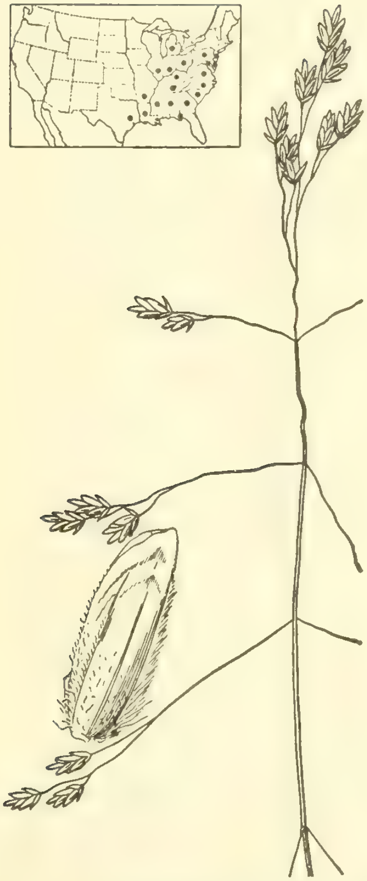
Poa alsodes. Panicle, × 1; floret, × 10. (Wilson, N. Y.)

Figure 175.–Grove bluegrass



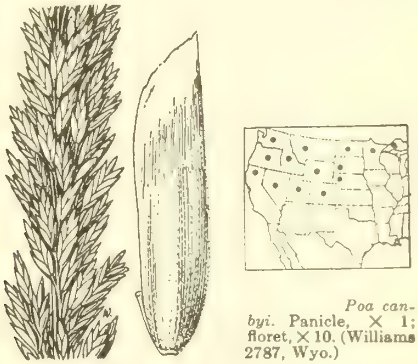
Poa arida. Panicle, × 1; floret, × 10. (Jones, Colo.)

Figure 176.--Plains bluegrass



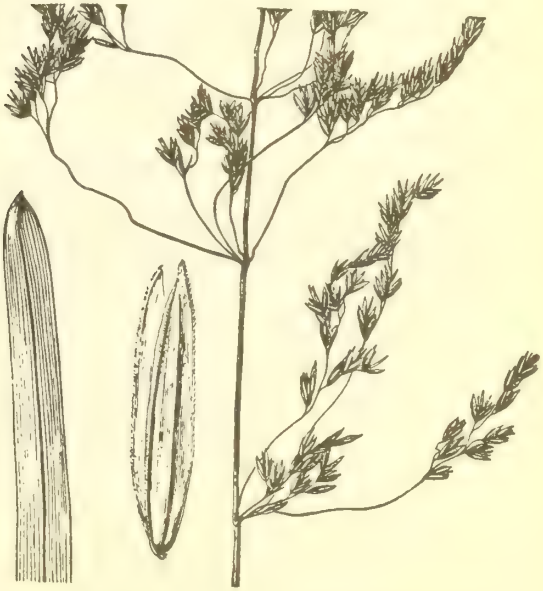
Poa autumnalis. Panicle, × 1; floret, × 10. (Curtiss 6787, Ga.)

Figure 177.–Autumn bluegrass



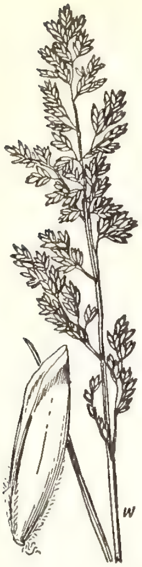
Poa canbyi. Panicle, × 1; floret, × 10. (Williams 2787, Wyo.)

Figure 178.–Canby bluegrass



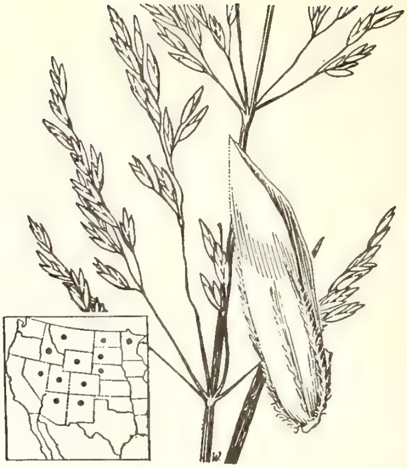
Poa chaixii. Panicle, × 1; floret, × 10. (Lakela 2012, Minn.)

Figure 179.–[No standard common name]



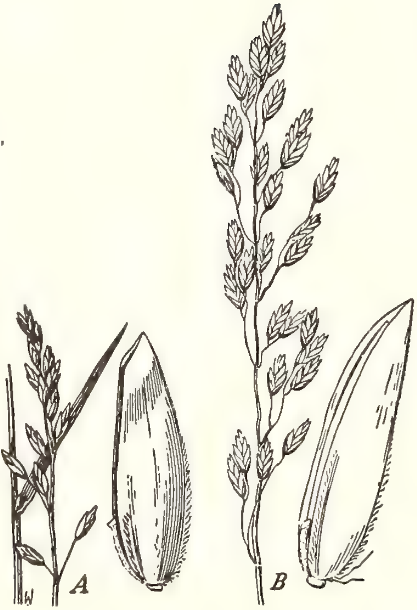
Poa compressa. Panicle, × 1; floret, × 10. (Gayle 750, Maine.)

Figure 179a.--Canada bluegrass (exotic)



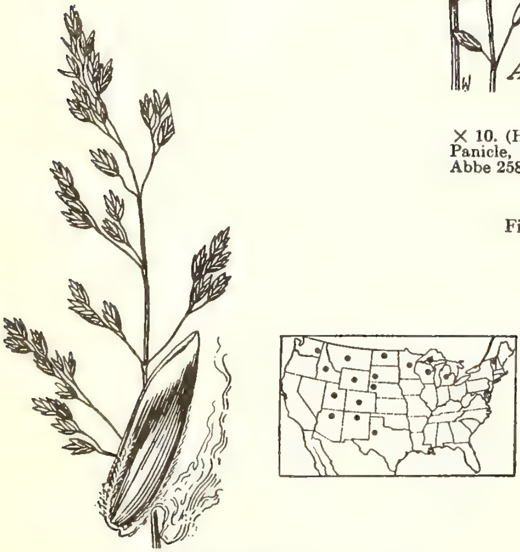
Poa glaucifolia. Panicle, × 1; floret, × 10. (Rydberg 3288, Mont.)

Figure 181.--[No standard common name]



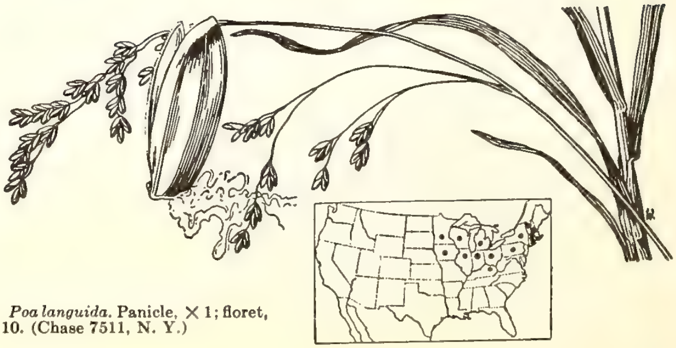
A, Poa glauca. Panicle, × 1; floret, × 10. (Hitchcock 16053, N. H.) *B, P. glaucantha.* Panicle, × 1; floret, × 10. (Butters, Abbe, and Abbe 258, Minn.)

Figure 180.--Greenland bluegrass



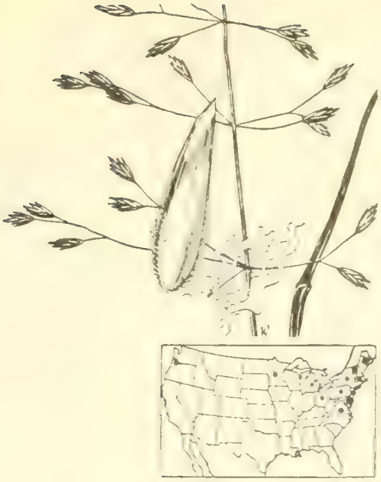
Poa interior. Panicle, × 1; floret, × 10. (Clements 297, Colo.)

Figure 182.--Inland bluegrass



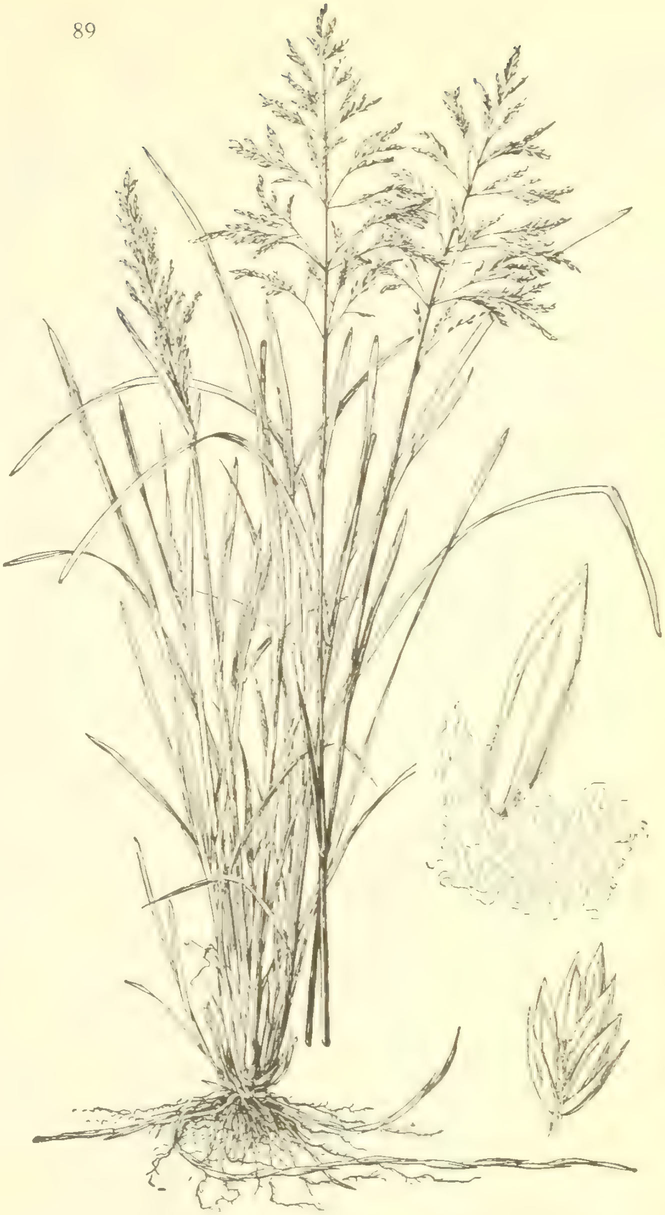
Poa languida. Panicle, × 1; floret, × 10. (Chase 7511, N. Y.)

Figure 183.--Torrey bluegrass



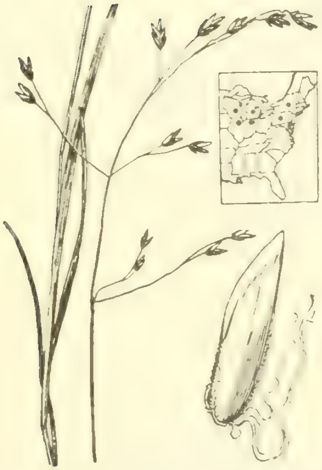
Poa nemoralis. Panicle, × 1; floret, × 10. (Hitchcock 23662, Newfoundland.)

Figure 184a.–Wood bluegrass (exotic)



Poa pratensis. Plant, × ½; spikelet, × 5; floret, × 10. (Williams, S. Dak.)

Figure 185a.–Kentucky bluegrass (exotic)



Poa paludigena. Panicle, × 1; floret, × 10. (Eames and Wiegand 9250, N. Y.)

Figure 184.–[No standard common name]

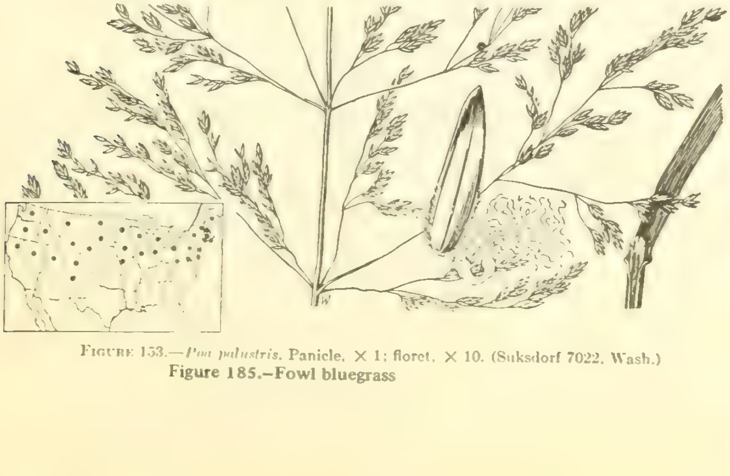
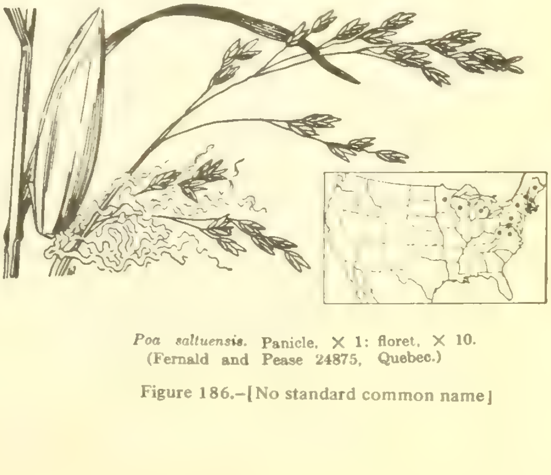


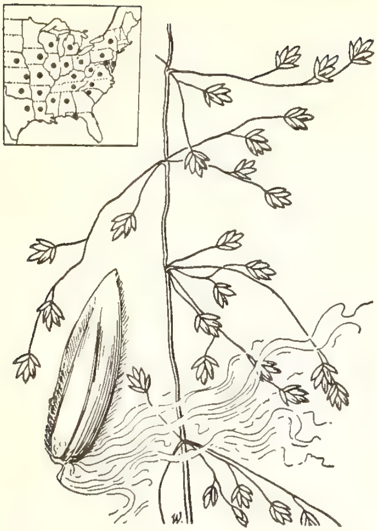
FIGURE 153.—*Poa palustris.* Panicle, × 1; floret, × 10. (Suksdorf 7022, Wash.)

Figure 185.–Fowl bluegrass



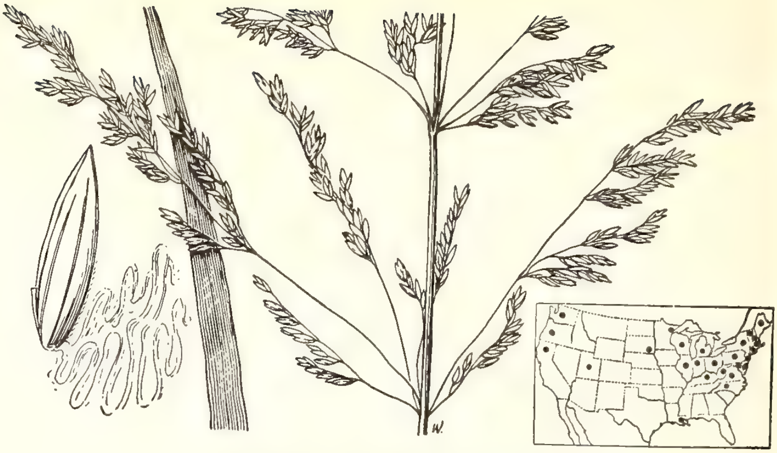
Poa saltuensis. Panicle, × 1; floret, × 10. (Fernald and Pease 24875, Quebec.)

Figure 186.–[No standard common name]



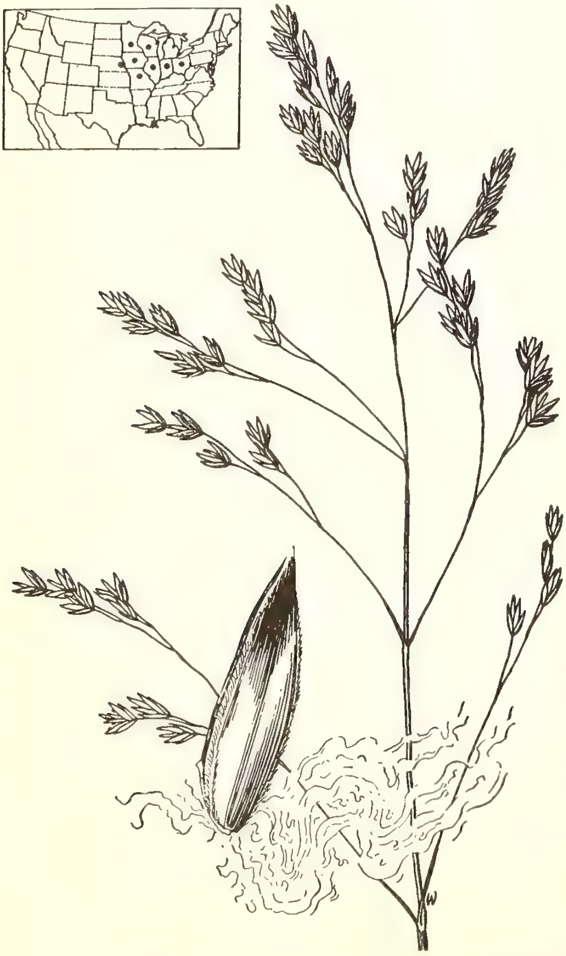
Poa sylvestris. Panicle, × 1; floret × 10. (Wheeler 6, Mich.)

Figure 187.--Woodland bluegrass



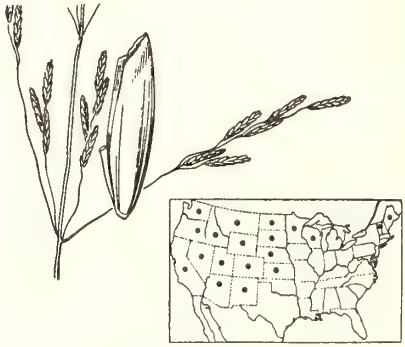
Poa trivialis. Panicle, × 1; floret, × 10. (Coville, N. Y.)

Figure 187a.–Roughstalk bluegrass (exotic)



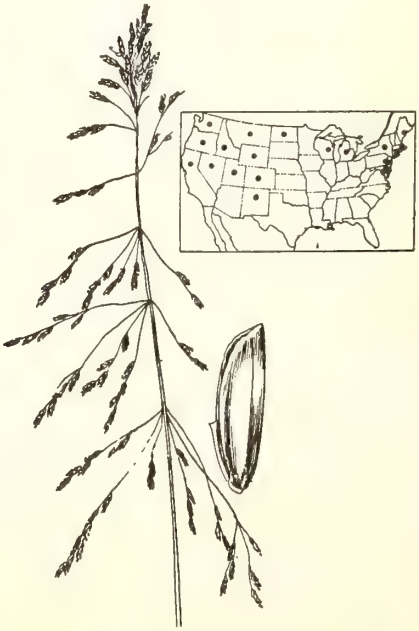
Poa wolfii. Panicle, × 1; floret, × 10. (Deam 33821, Ind.)

Figure 188.--Wolfs bluegrass



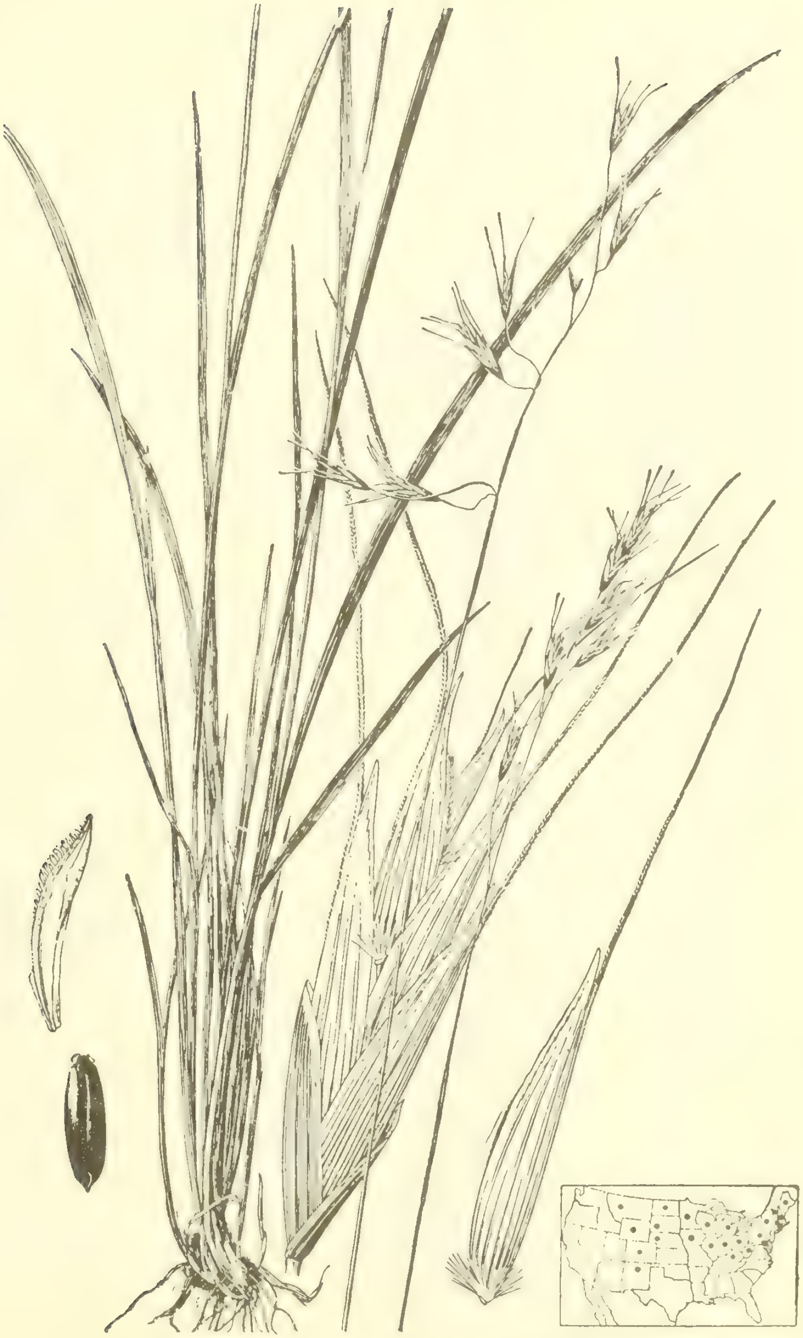
Puccinellia airoides. Panicle, × 1; floret, × 10. (Rydberg 2135, Mont.)

Figure 189.–Nuttall alkaligrass (Hitchcock)



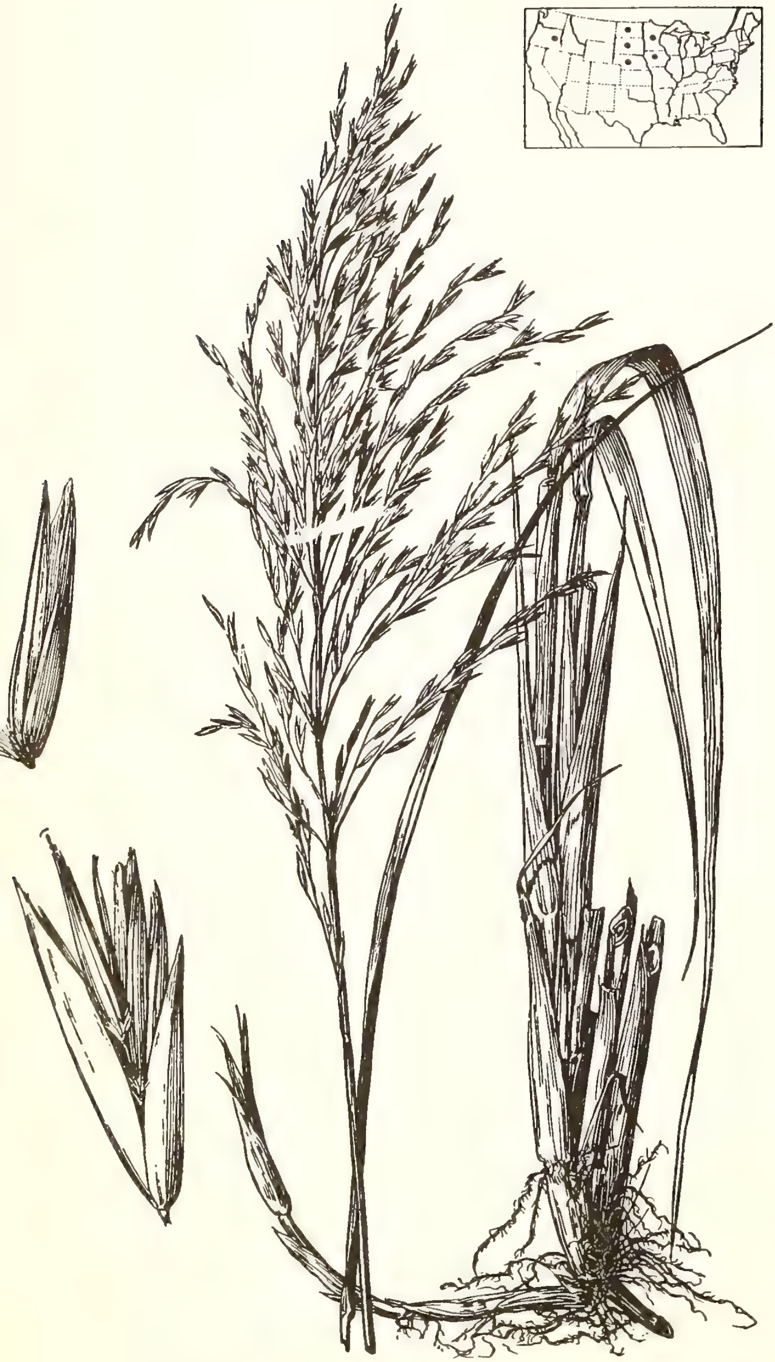
Puccinellia distans. Panicle, × ½; floret, × 10. (Schuette, Wis.)

Figure 189a.–Weeping alkaligrass (exotic)



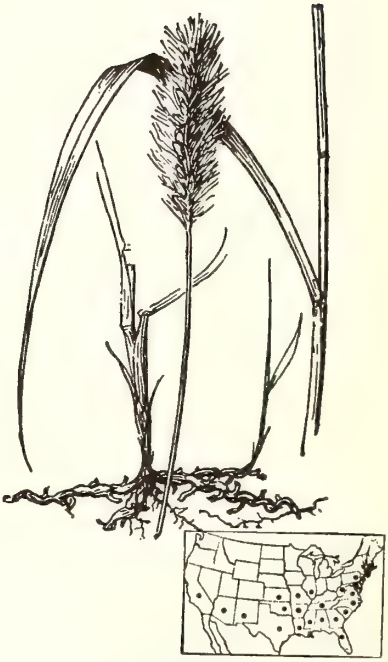
Schizachne purpurascens. Plant, × ½; lemma, palea, and caryopsis, × 5. (Chase 7444, N. Y.)

Figure 190.–False melic



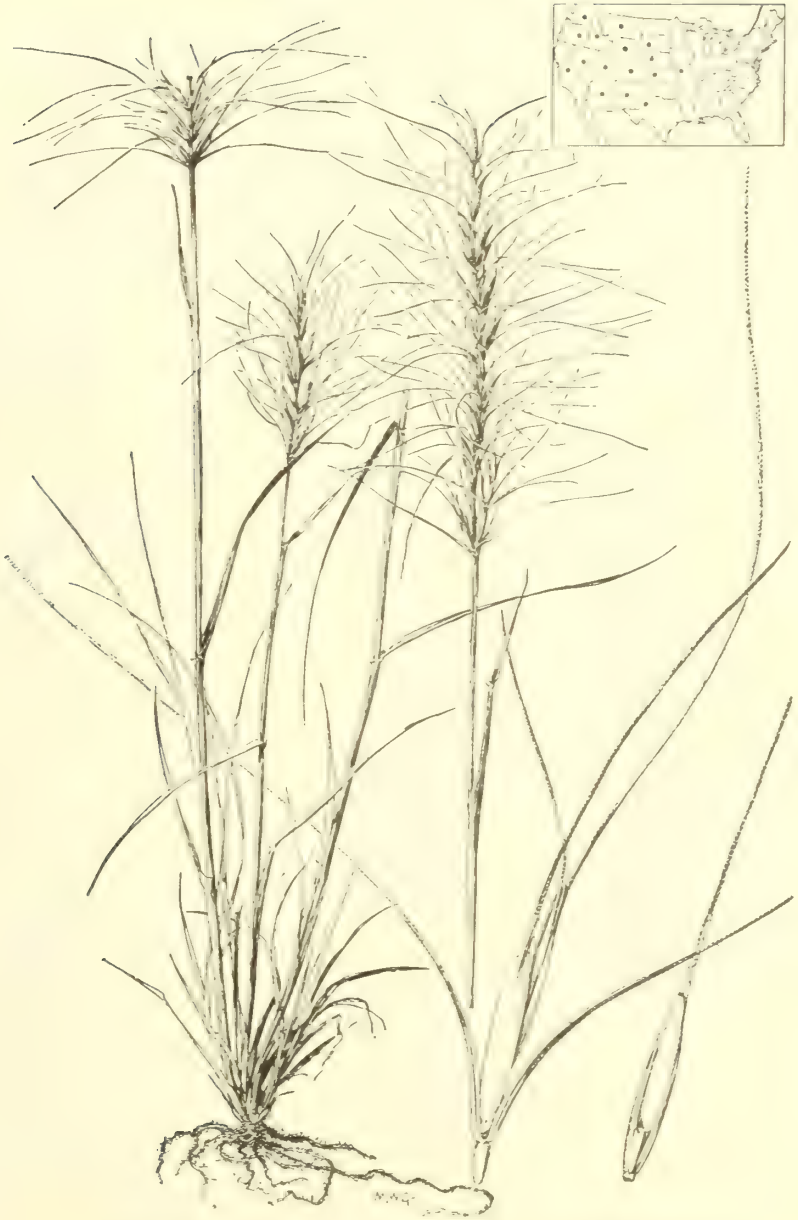
Scolochloa festucacea. Plant, × ½; spikelet and floret, × 5. (Griffiths 870, S. Dak.)

Figure 191.--Rivergrass



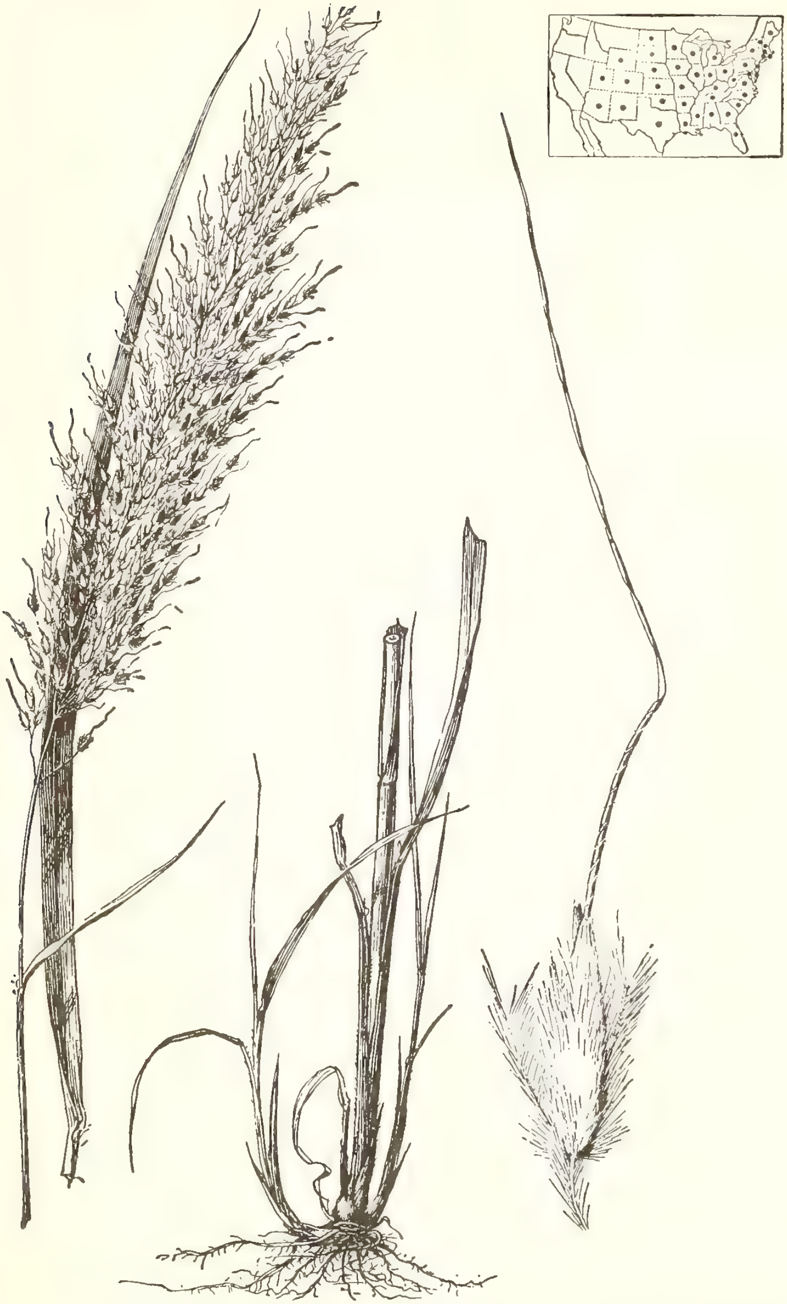
Setaria geniculata, × 1. (Chase 2981, Md.)

Figure 192.--Knotroot bristlegrass



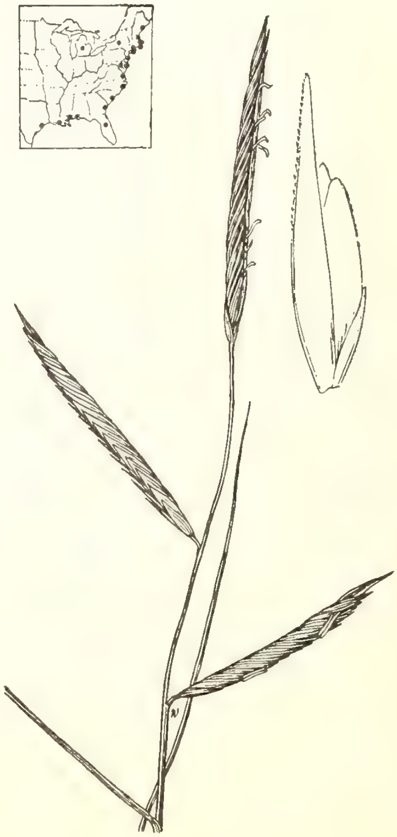
Sitanion hystrix. Plant, × ½; spikelet and floret, × 3. (Hitchcock 2289, Colo.)

Figure 193.--Bottlebrush squirreltail



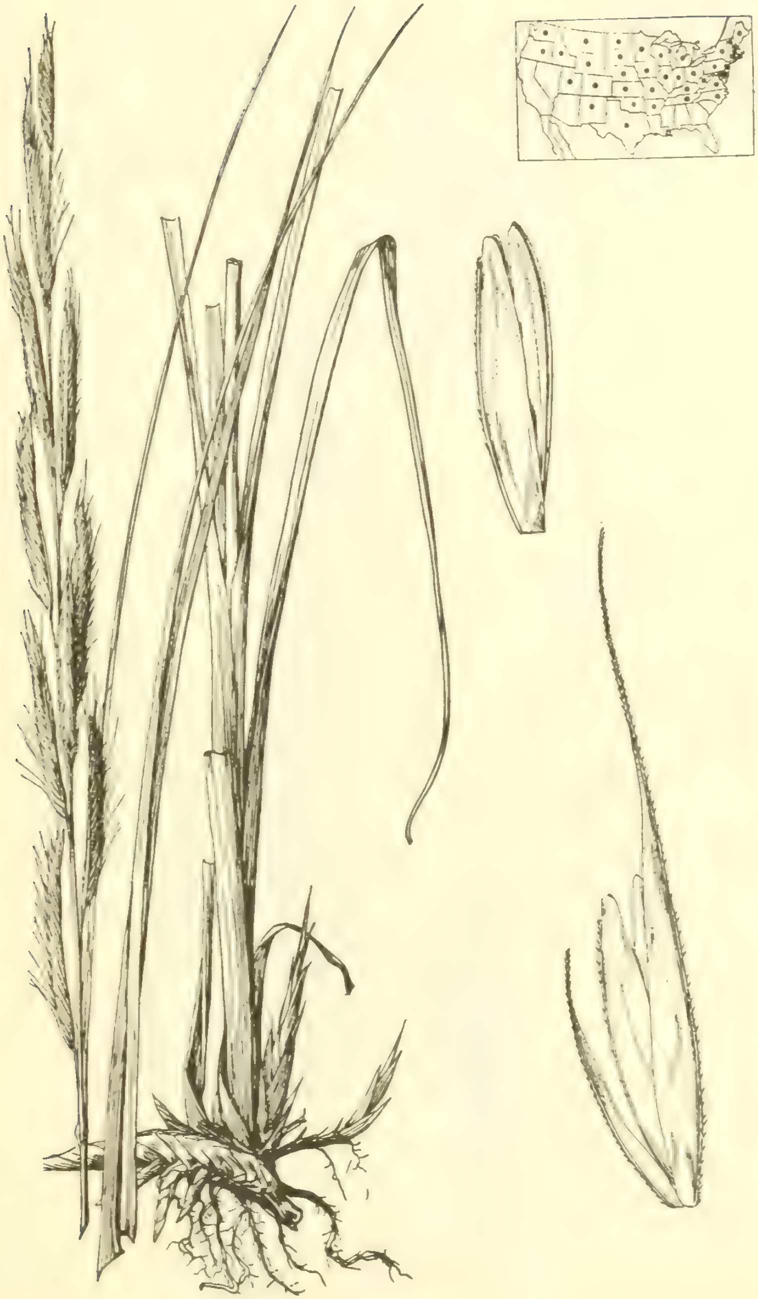
Sorghastrum nutans. Plant, × ½; spikelet with pedicel and rachis joint, × 5. (Deam, Ind.)

Figure 194.–Yellow indiangrass



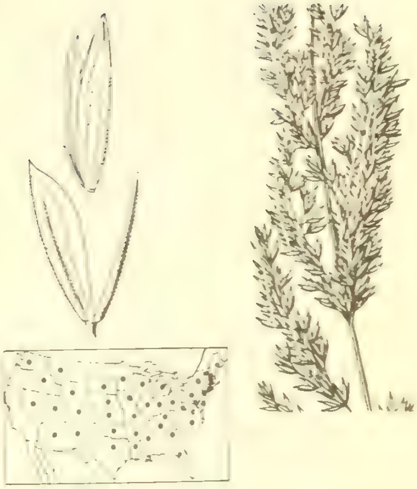
Spartina patens. Panicle, × 1; spikelet, × 5. (Killip 6359, Md.)

Figure 195.--Marshhay cordgrass



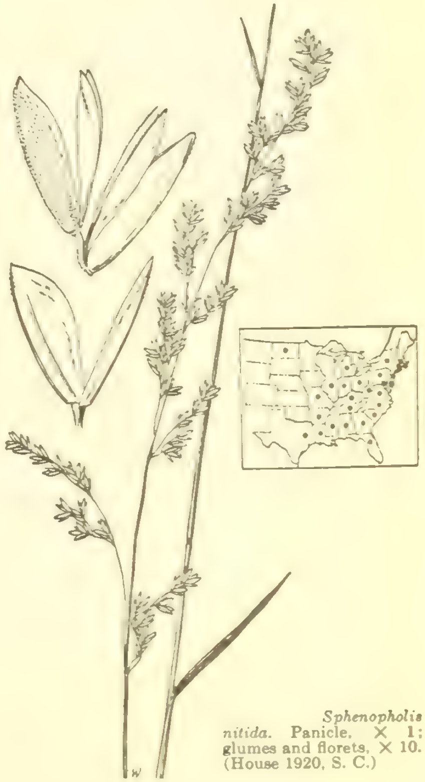
Spartina pectinata. Plant, × ½; spikelet and floret, × 5. (Worthern, Mass.)

Figure 196.–Prairie cordgrass



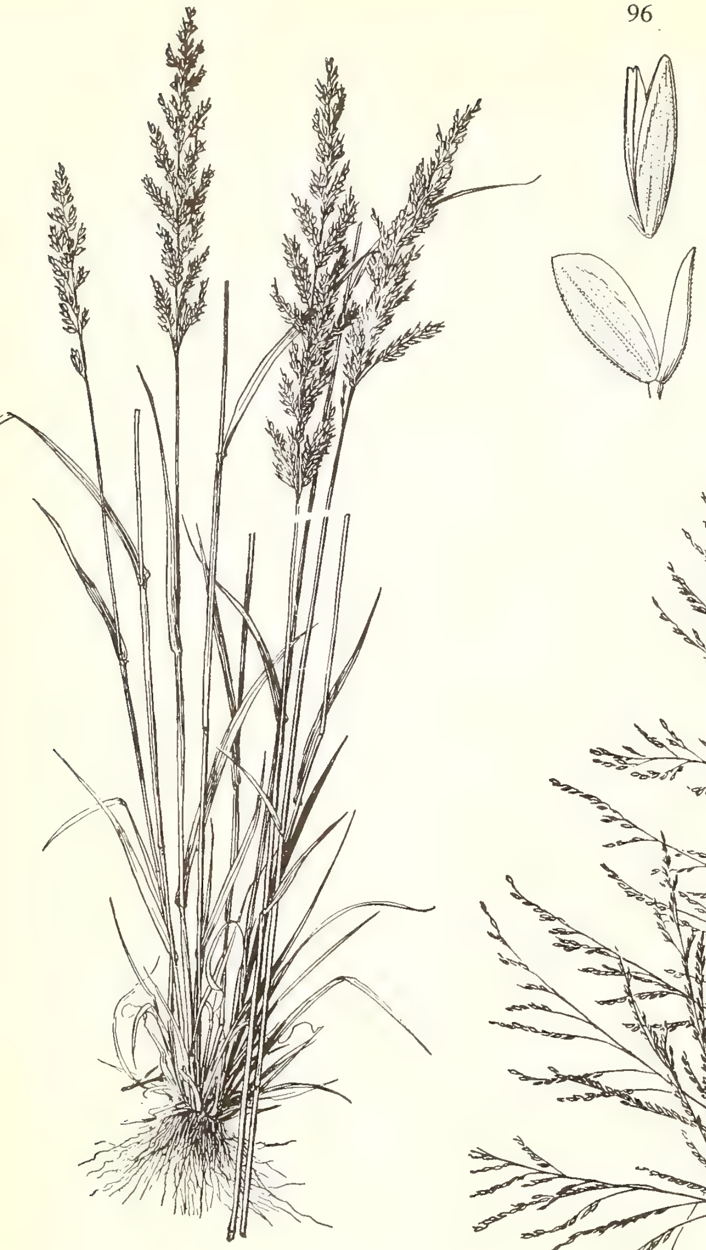
Sphenopholis intermedia. Panicle, × 1; glumes and floret, × 10. (Clark 1785, Ind.)

Figure 197.–Slender wedgescale



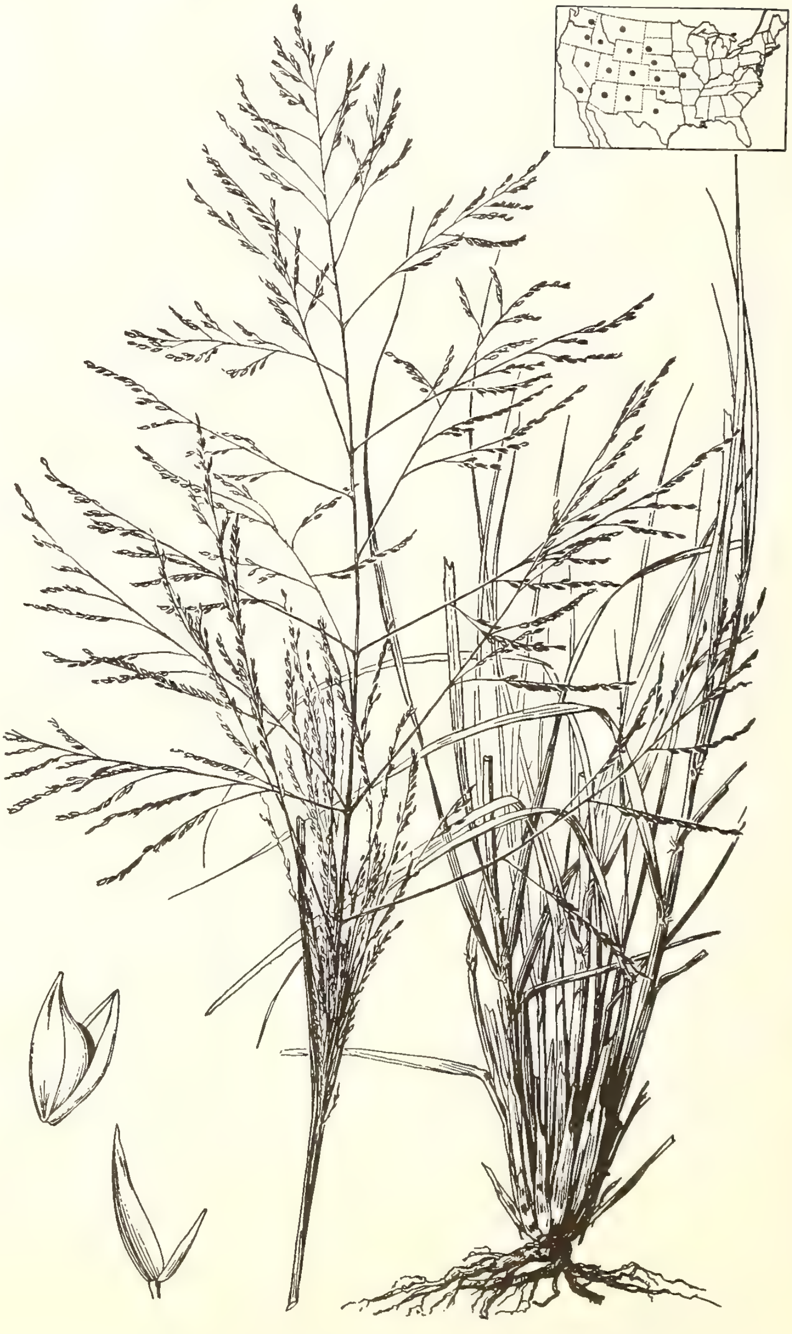
Sphenopholis nitida. Panicle, × 1; glumes and florets, × 10. (House 1920, S. C.)

Figure 198.–Shiny wedgescale



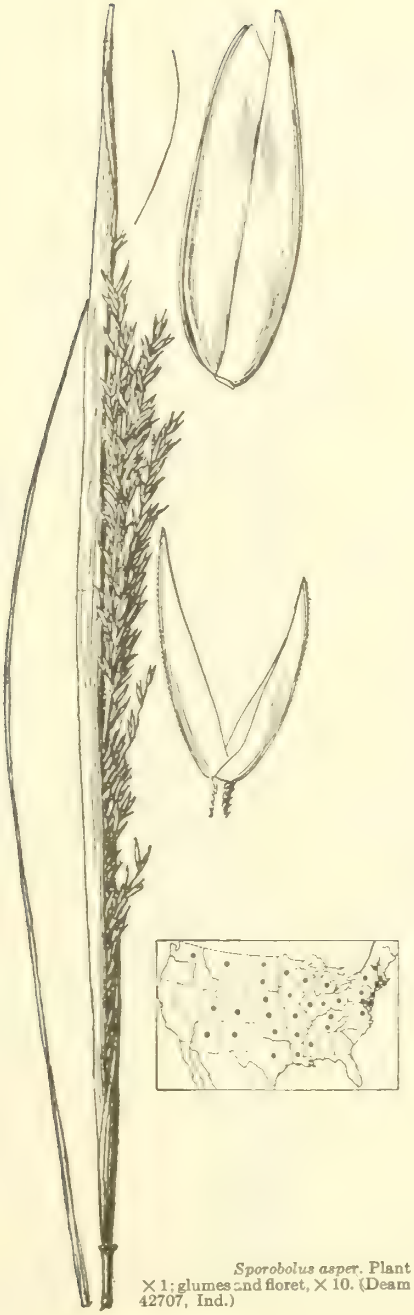
Sphenopholis obtusata. Plant, × ½; glumes and floret, × 10. (Hitchcock 1453, N. C.)

Figure 199.--Prairie wedgescale



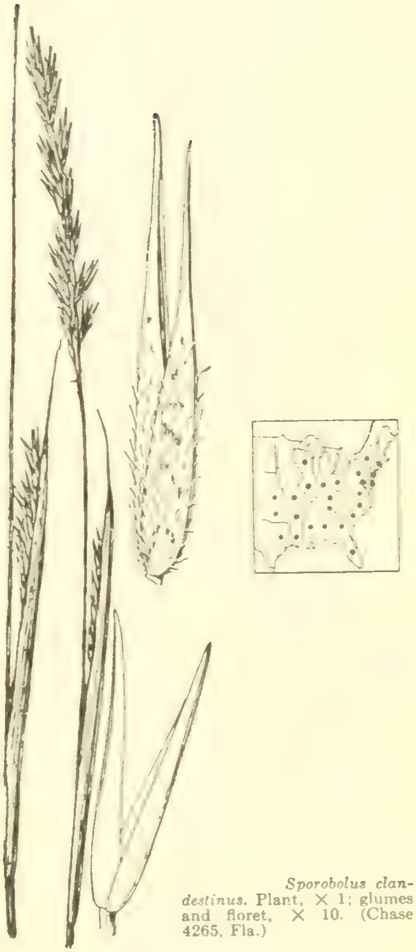
Sporobolus airoides. Plant, × ½; glumes and floret, × 10. (Metcalfe, N. Mex.)

Figure 200.--Alkali sacaton



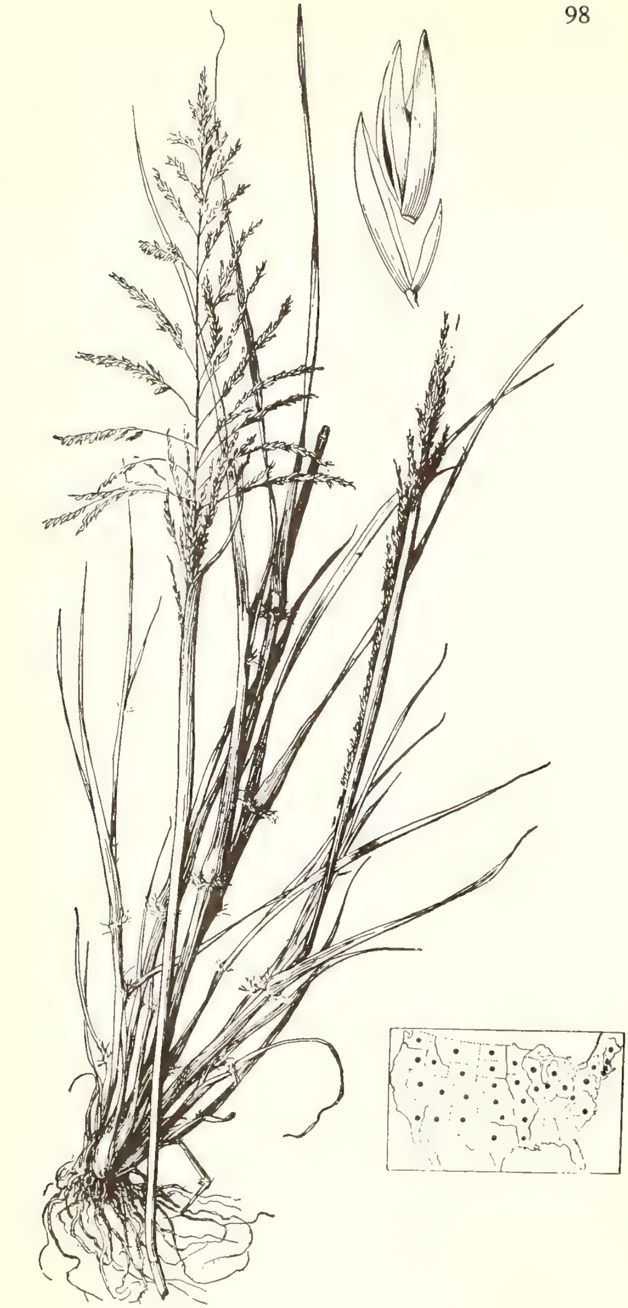
Sporobolus asper. Plant × 1; glumes and floret, × 10. (Deam 42707, Ind.)

Figure 201.–Tall dropseed



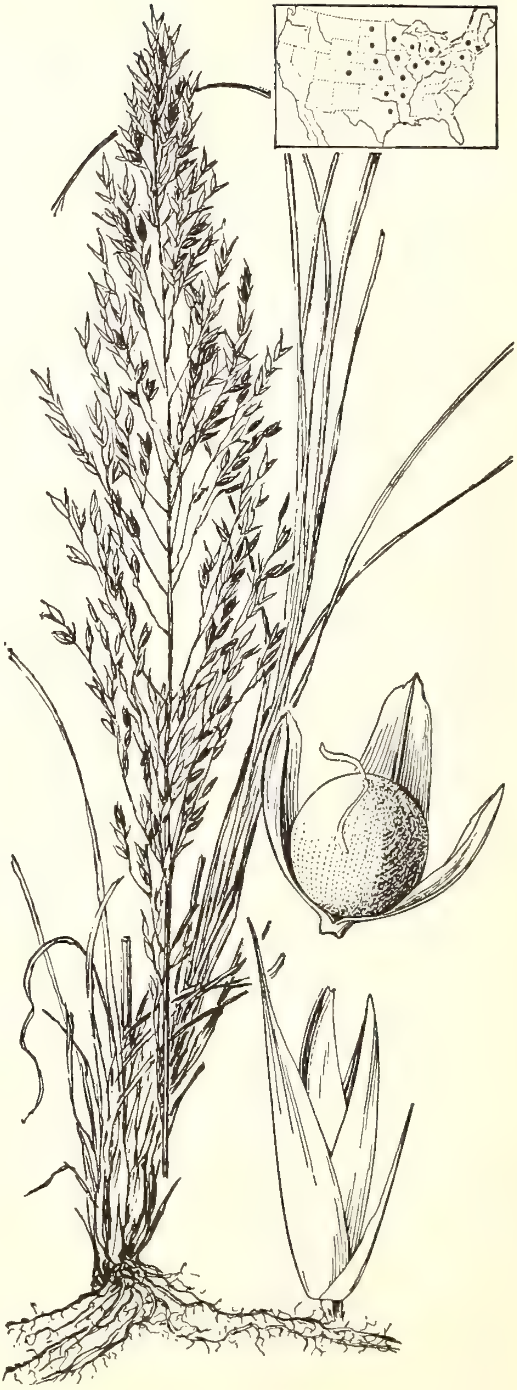
Sporobolus clandestinus. Plant, × 1; glumes and floret, × 10. (Chase 4265, Fla.)

Figure 202.–Hidden dropseed



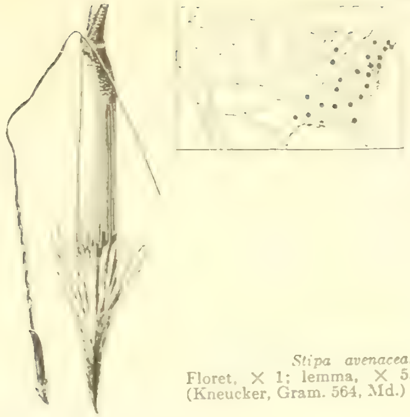
Sporobolus cryptandrus. Plant, × ½; glumes and floret, × 10. (Shear 253, Nebr.)

Figure 203.--Sand dropseed



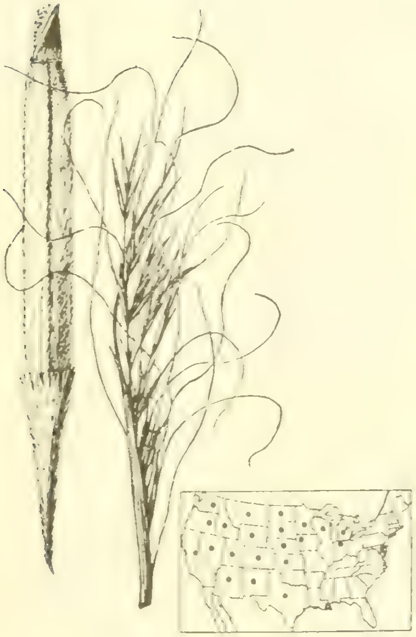
Sporobolus heterolepis. Plant, × 1; spikelet and floret with caryopsis and split palea, × 10. (McDonald, Ill.)

Figure 204.--Prairie dropseed



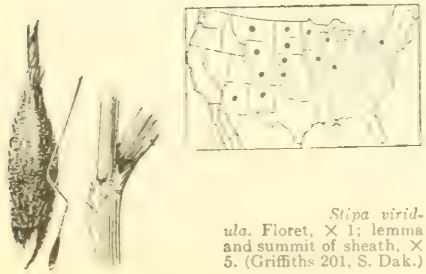
Stipa avenacea. Floret, × 1; lemma, × 5. (Kneucker, Gram. 564, Md.)

Figure 205.—Blackseed needlegrass



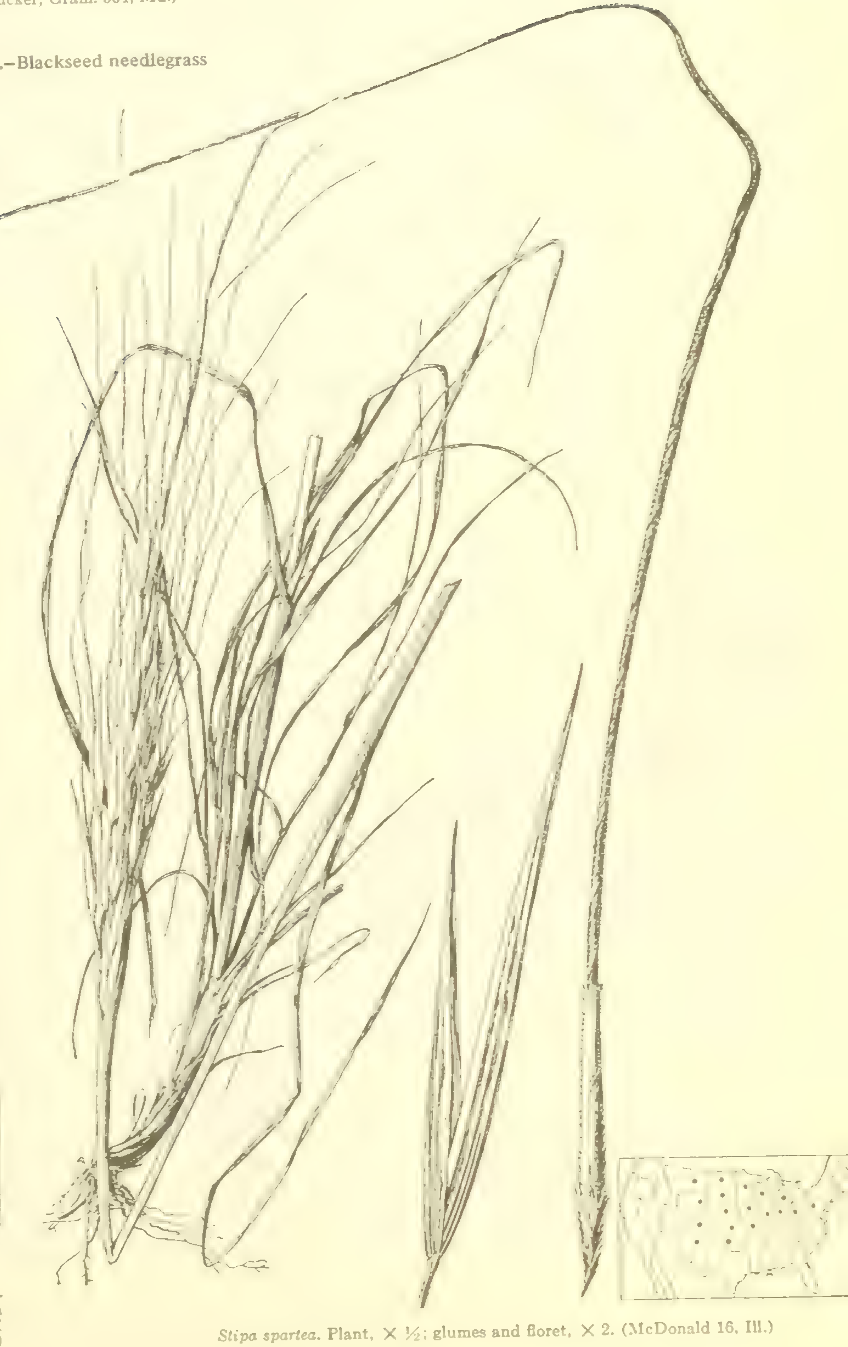
Stipa comata. Panicle, × ½; lemma, × 5. (Hitchcock 1700, Colo.)

Figure 206.—Needle-and-thread



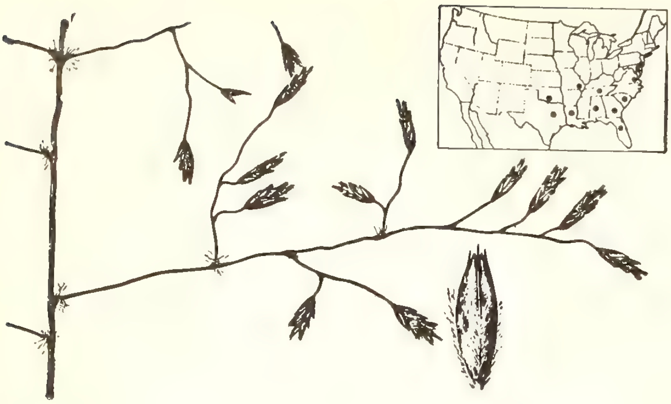
Stipa viridula. Floret, × 1; lemma and summit of sheath, × 5. (Griffiths 201, S. Dak.)

Figure 208.—Green needlegrass



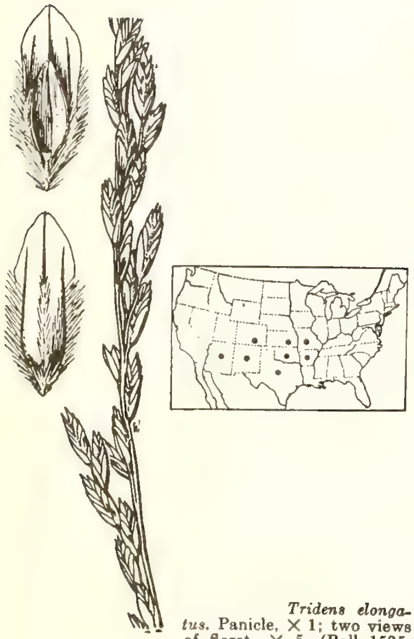
Stipa spartea. Plant, × ½; glumes and floret, × 2. (McDonald 16, Ill.)

Figure 207.—Porcupinegrass



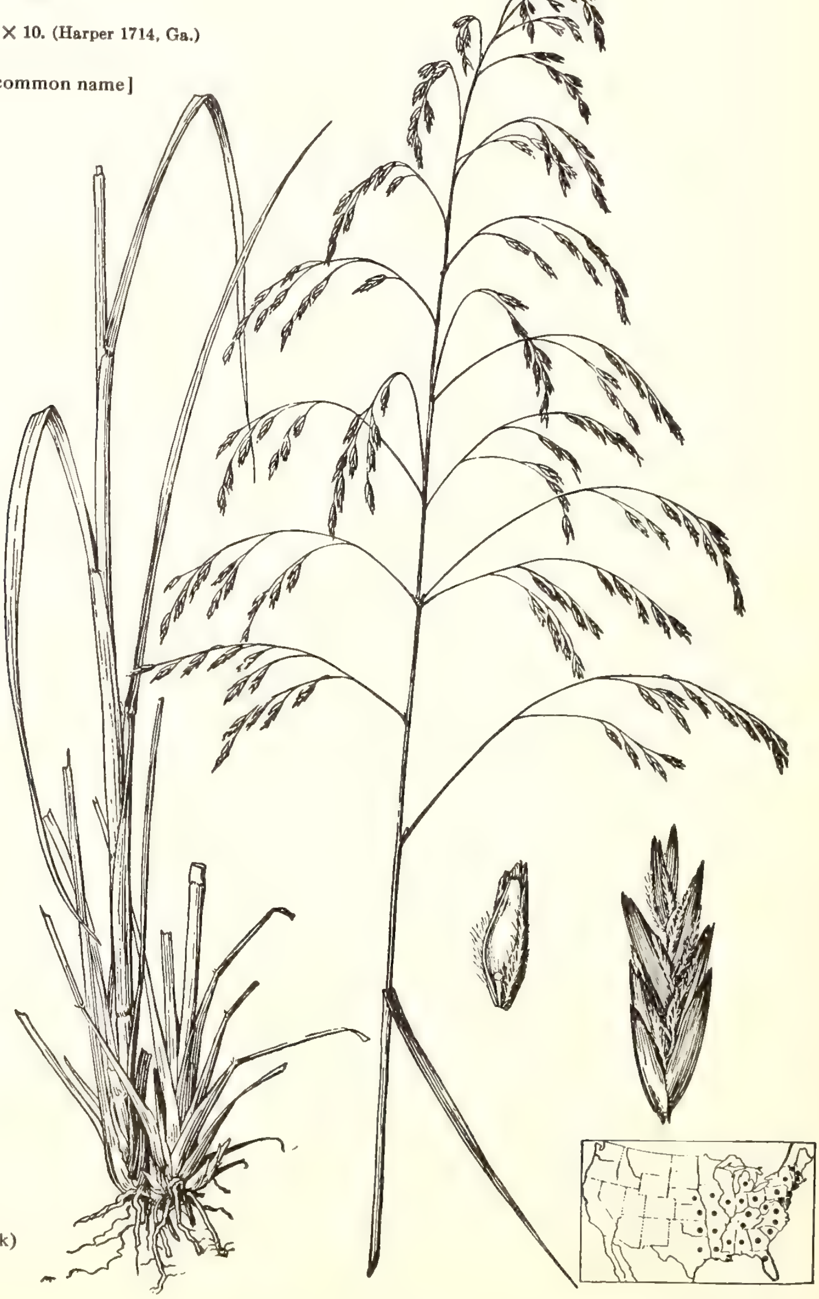
Tridens chapmani. Panicle, × 1; floret, × 10. (Harper 1714, Ga.)

Figure 209.–[No standard common name]



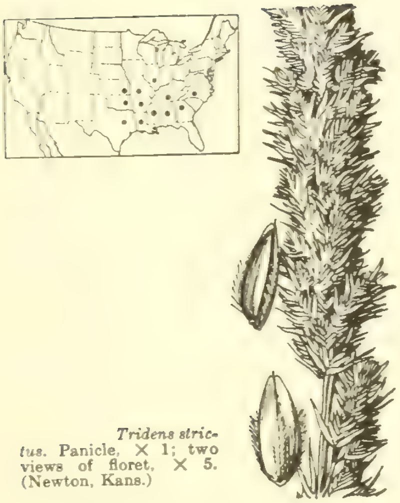
Tridens elongatus. Panicle, × 1; two views of floret, × 5. (Ball 1535, Tex.)

Figure 210.–Rough tridens (Hitchcock)



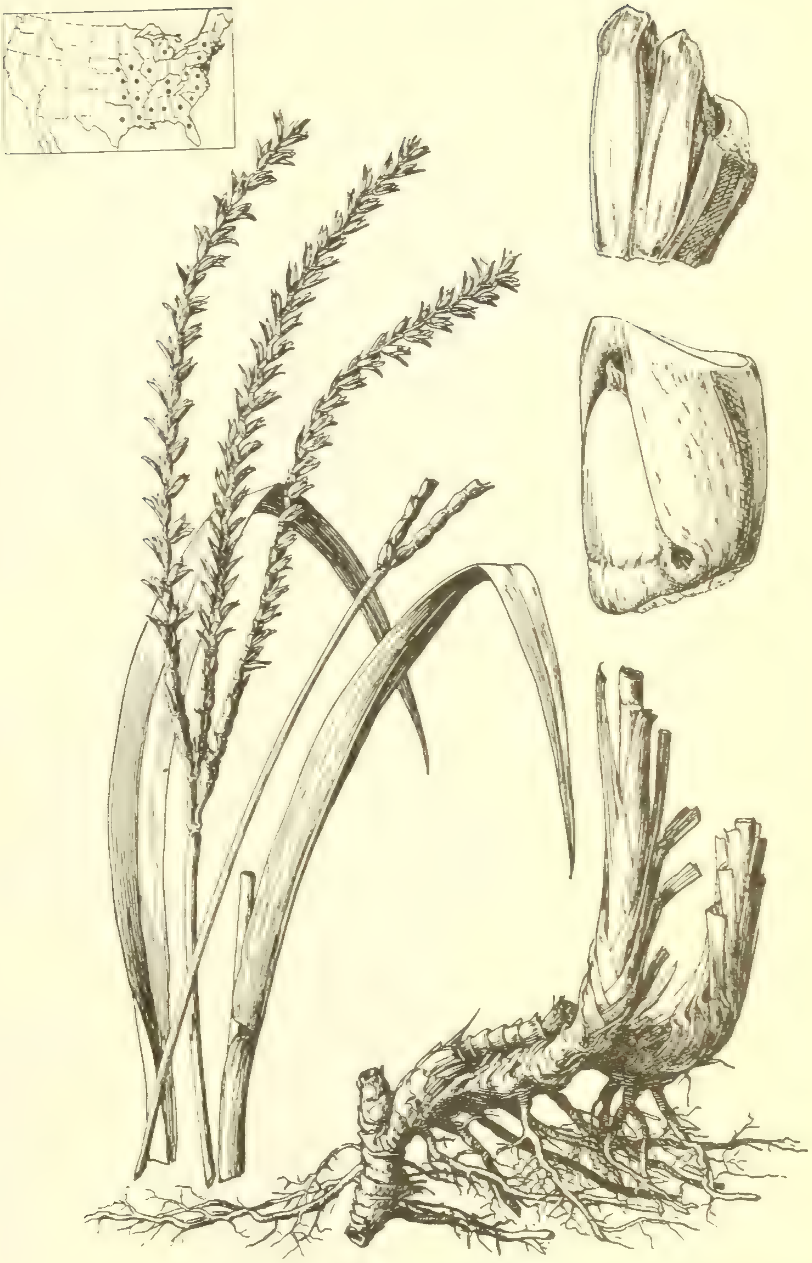
Tridens flavus. Plant, × ½; spikelet and floret, × 5. (Dewey 350, Va.)

Figure 211.–Purpletop



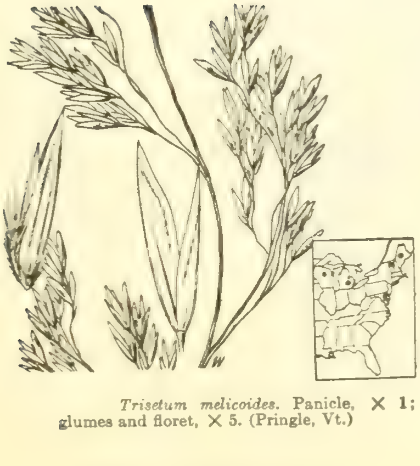
Tridens strictus. Panicle, × 1; two views of floret, × 5. (Newton, Kans.)

Figure 212.–Longspike triodia



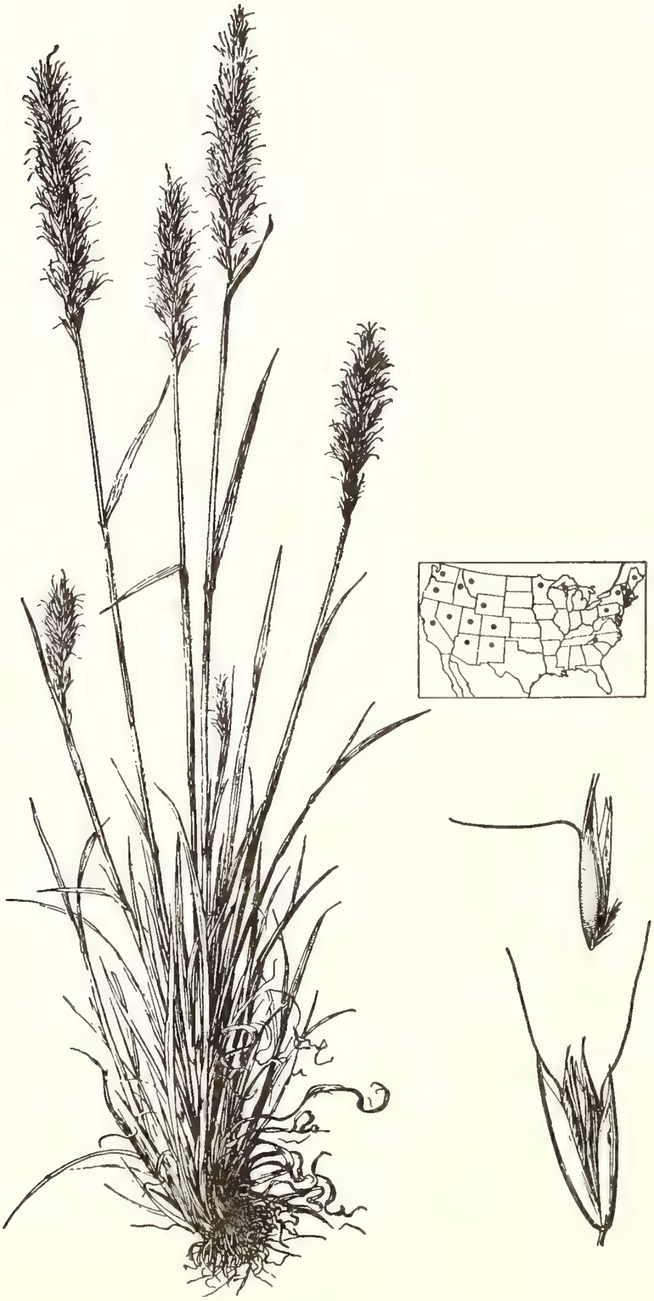
Tripsacum dactyloides. Plant, × ½; pistillate spikelets with rachis joint and pair of staminate spikelets with rachis joint, × 5. (Amer. Gr. Natl. Herb. 229, Va.)

Figure 213.–Eastern gamagrass



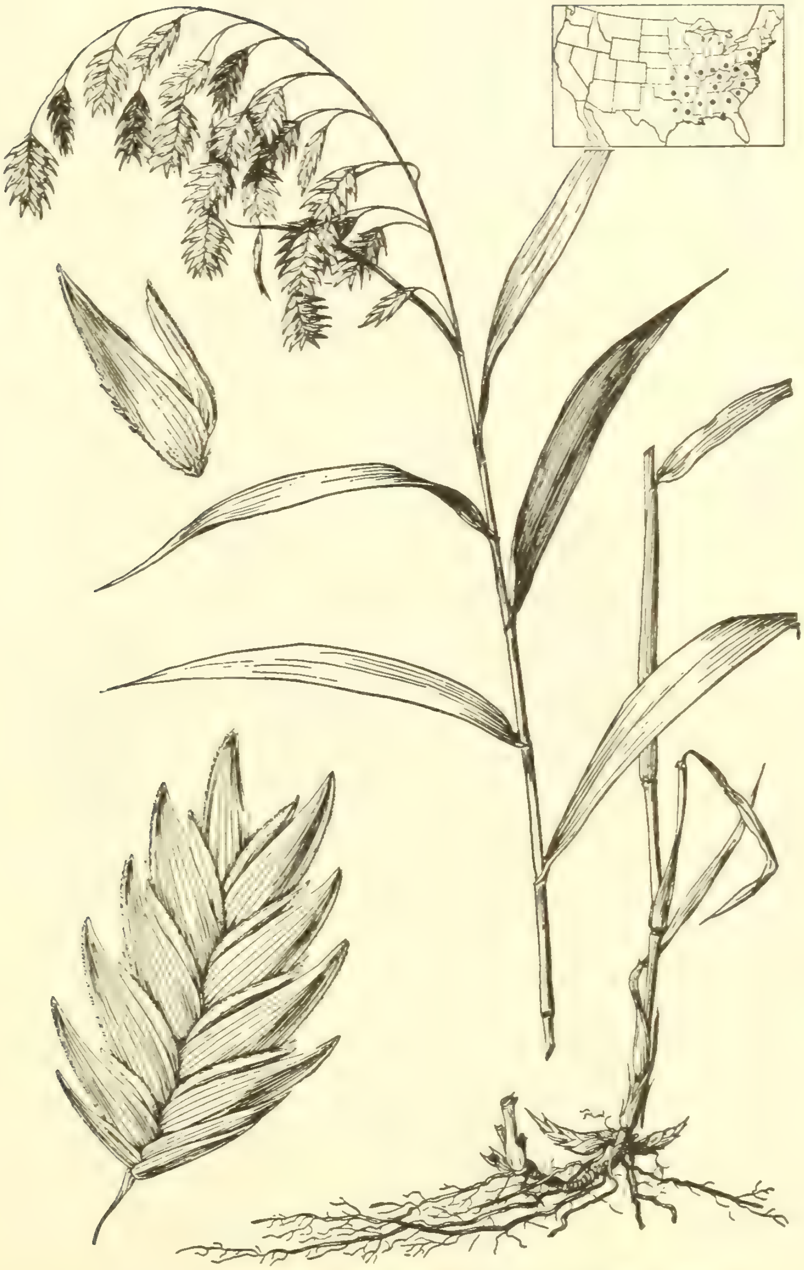
Trisetum melicoides. Panicle, × 1; glumes and floret, × 5. (Pringle, Vt.)

Figure 214.–Melic trisetum



Trisetum spicatum. Plant, × ½; spikelet and floret, × 5. (Rydberg and Bessey 3593, Mont.)

Figure 215.--Spike trisetum

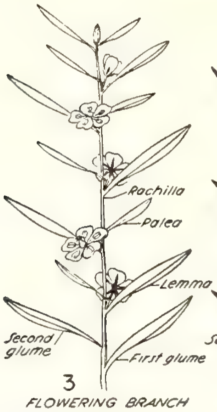


Uniola latifolia. Plant, × ½; spikelet and floret, × 3. (Chase 5874, Md.)

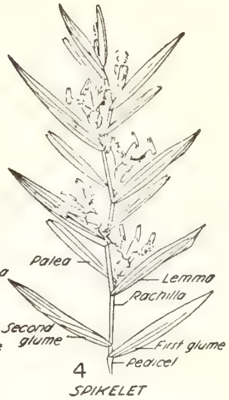
Figure 216.–Broadleaf uniola

STRUCTURE OF GRASS PLANTS

10

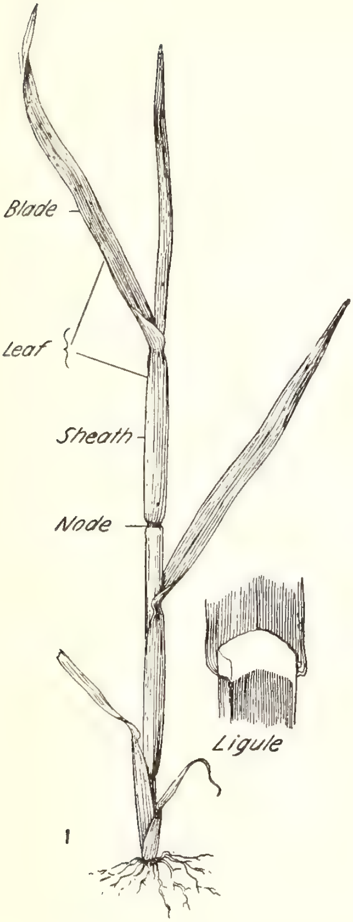


3
FLOWERING BRANCH

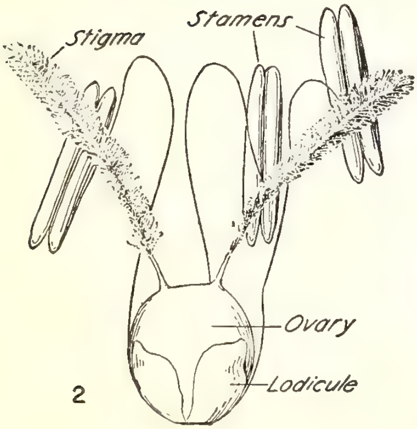


4
SPIKELET

Diagram of leafy flowering branch, the flowers and bracts arranged as are those in grasses. Figure 4: Diagram of grass spikelets for comparison.



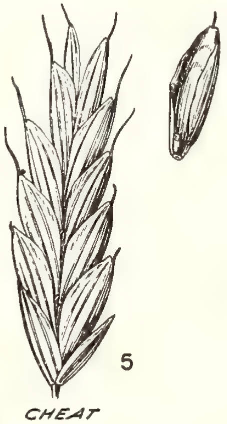
1



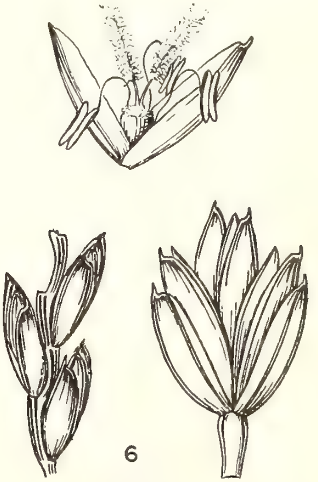
2

The parts of a young shoot; (2) The flower of a grass plant.

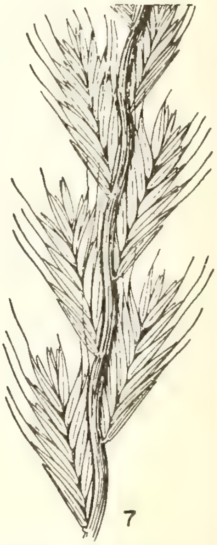
11



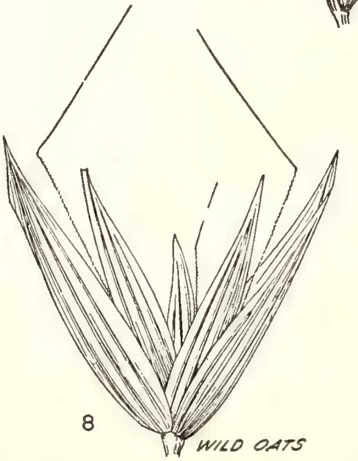
5
CHEAT



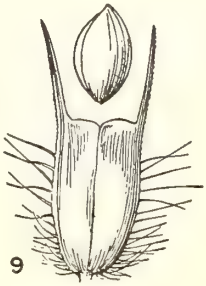
6
WHEAT



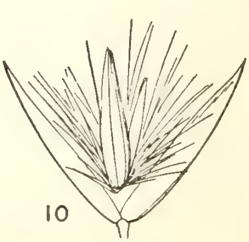
7
ITALIAN RYEGRASS



8
WILD OATS

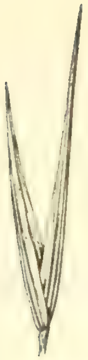


9
TIMOTHY



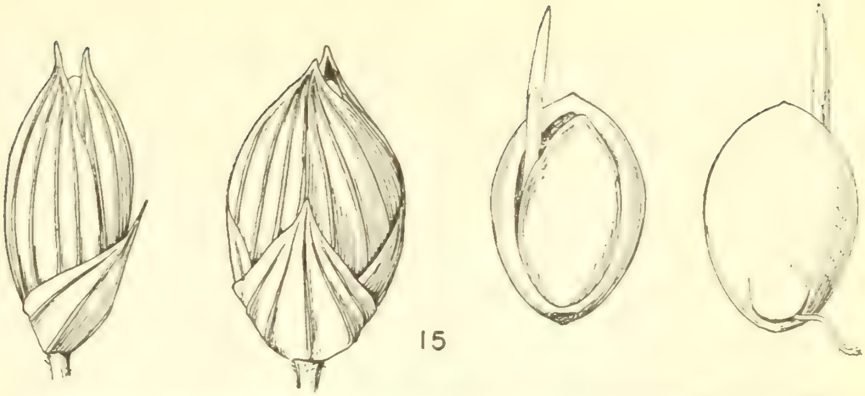
10
BLUEJOINT

Spikelet of cheat; floret showing palea and rachilla segment. Figure 6: Spikelet of wheat with segment of axis; three segments of spike, showing arrangement of spikelets, flat against the axis; spikelet open. 7: Part of spike of Italian ryegrass, showing arrangement of spikelets, edge to the rachis. 8: Spikelet of wild oats. 9: Spikelet of timothy, floret above. 10: Glumes and floret of bluejoint.



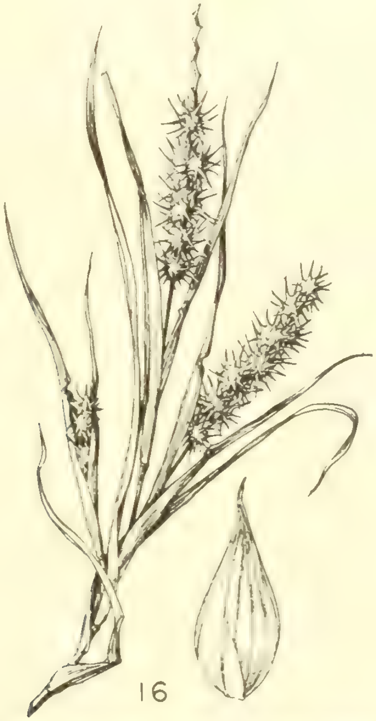
11

The floret of needlegrass (*Stipa*).



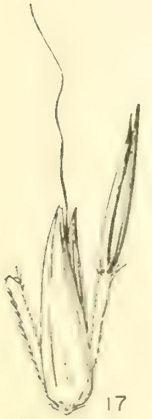
15

Broomcorn millet: Side and back view of spikelet; two views of germinating grain.

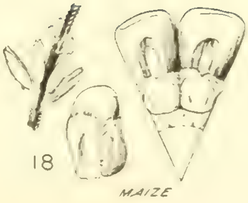


16

Branch of sandbur; spikelet, enlarged.

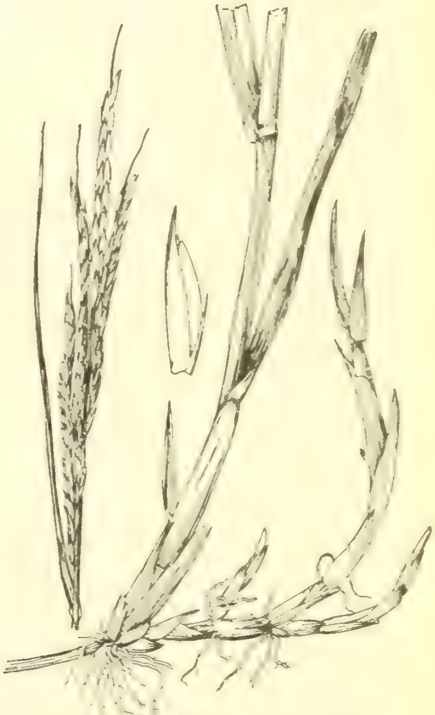


17



18

Pair of spikelets of bluestem with rachis segment and pedicel. Figure 18: Maize or Indian corn: Pair of pistillate spikelets attached to rachis (cob), the mature grains much exceeding the glumes, second glume and embryo side of grain showing; single pistillate spikelet soon after flowering, the stigmas fallen; 2 pairs of staminate spikelets on fragment of rachis (tassel).



19

Smooth cordgrass (*Spartina alterniflora*): Base of plant showing rhizomes; inflorescense; spikelet, enlarged.

GLOSSARY

ACUMINATE: Gradually tapering to a sharp point.
ACUTE: Sharp-pointed but less tapering than acuminate.
ANTHESIS: The period during which a flower is open.
APPRESSED: Lying against an organ.
ARISTATE: Awned.
ARTICULATE: Jointed by a line of demarcation between two parts which at maturity separate by a clean-cut scar.
ASCENDING: Sloping upward.
ATTENUATE: Gradually narrowed to a slender apex or base.
BIFID: Two-cleft or two-lobed.
BRACT: Reduced leaves of the inflorescence.
CALLUS: The indurate downward extension of the mature lemma; morphologically a part of the rachilla.
CARINATE: Keeled.
CARTILAGINOUS: Hard and tough, but elastic.
CARYOPSIS: The grain or fruit of grasses.
CHARTACEOUS: Having the texture of writing paper.
CILIATE: Fringed with hairs on the margin.
COMPRESSED: Flattened laterally.
CORDATE: Heart-shaped.
CORIACEOUS: Leathery in texture.
CULM: The jointed stem of grasses.
CUNEATE: Wedge-shaped with the narrow part below.
CUSPIDATE: Tipped with a sharp short rigid point.
DISARTICULATING: Separating at maturity.
EROSE: Irregularly notched at apex.
FASCICLE: A little bundle or cluster.
FILIFORM: Threadlike.
FLORET: The lemma and palea with included flower.
GENICULATE: Bent abruptly.
GLABROUS: Without hairs.
GLAUCOUS: Covered with a waxy blue-green coating.
GLUMES: The pair of bracts at the base of a spikelet.
HIRSUTE: Pubescent with straight rather stiff hairs.
HYALINE: Thin and translucent or transparent.
IMBRICATE: Overlapping.
INDURATE: Hard.
INFLORESCENCE: The flowering part of a plant.
KEEL: Sharp fold at the back.
LANATE: Woolly.
LANCEOLATE: Rather narrow, tapering to both ends.
LATERALLY (compressed): Flattened from the sides.
LEMMA: The bract of a spikelet above the pair of glumes.
MEMBRANACEOUS: Thin, like a membrane.
MUCRO: A minute awn.
NERVE: The vascular veins of lemmas, glumes, and blades.
OBLONG: Longer than wide.
OBTUSE: Rounded at the apex.
OVATE: Egg-shaped.
PALEA: The inner bract of a floret.
PANICLE: An inflorescence with a main axis and subdivided branches.
PEDICEL: The stalk of a spikelet.
PEDICELLATE: Having a pedicel.
PEDUNCLE: The stalk or stem of an inflorescence.
PERFECT: Flowers having both stamens and pistil.
PILOSE: Pubescent with soft straight hairs.
PISTILLATE: Flowers bearing pistils only.
PUBERULENT: Minutely pubescent.
PUBESCENT: Covered with hairs.
RACEME: An inflorescence in which the spikelets are pediceled on a rachis.
RACHILLA: A small rachis; applied especially to the axis of a spikelet.
RACHIS: The axis of a spike or raceme.

RHIZOME: An underground stem.
SCABROUS: Rough to the touch.
SCARIOUS: Thin, dry, and membranaceous, not green.
SECUND: Arranged along one side.
SESSILE: Without a pedicel or stalk.
SETACEOUS: Bristlelike.
SHEATH: The lower part of the leaf that encloses the stem.
SPIKE: Unbranched inflorescence with spikelets sessile on the rachis.
SPIKELET: Inflorescence unit in grasses consisting of glumes and one or more florets.
STIPE: A minute stalk to an organ.
STOLON: A modified creeping and rooting above ground stem.
STRAMINEOUS: Straw-colored.
STRIATE: Marked with fine parallel lines or minute ridges.
STRIGOSE: Rough with short stiff hairs.
SUB-: Prefix to denote somewhat, slightly, or in a less degree.
SUBTEND: To be below.
SUBULATE: Awl-shaped.
TERETE: Cylindric and slender.
TRIFID: Divided into three parts.
TRUNCATE: Ending abruptly, as if cut off horizontally.
TURGID: Swollen.
UNILATERAL: One-sided or turned to one side.
VERTICILLATE: Whorled.
VILLOUS: Pubescent with long soft hairs.
VIRGATE: Straight and erect; wand-shaped.
WEB: Cluster of soft hairs at base of floret in some bluegrasses.

INDEX TO GRASS SPECIES

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
Agropyron	1	13, 15	34-35
A. dasytachyum	1	15	34
A. intermedium (exotic)	–	15	–
A. pseudorepens	1	15	34
A. repens (exotic)	–	15	34
A. smithii	1	15	35
A. spicatum	1	15	35
A. subsecundum	1	15	35
A. trachycaulum	1	15	35
A. trichophorum (exotic)	–	15	–
Agrostis	1	14-15	36-37
A. alba (exotic)	–	15	36
A. hiemalis	1	16	36
A. perennans	1	16	37
A. scabra	1	16	37
alkaligrasses	10	–	90
alkali muhly	5	–	69
alkali sacaton	10	–	96
alpine timothy	9	–	85
Alopecurus	1	14, 16	38
A. aequalis	1	16	38
A. arundinaceus (exotic)	–	16	–
A. geniculatus	1	16	38
A. pratensis (exotic)	–	–	–
American beachgrass	1	–	38
American beakgrain	3	–	53
American mannagrass	4	–	60
American milletgrass	5	–	69
Ammophila	1	14, 16	38
A. breviligulata	1	16	38
Andropogon	1	15-16	38-41
A. elliottii	1	17	38
A. gerardi	1	16	39
A. hallii	1	17	39
A. littoralis	1	16	39
A. saccharoides	1	17	40
A. scoparius	1	16	40
A. ternarius	1	17	40
A. virginicus	2	17	41
Aristida	2	14, 17	41-42
A. lanosa	2	17	41
A. longiseta	2	17	42
A. purpurascens	2	17	42
arrowfeather threeawn	2	–	42
Arundinaria	2	17	43
A. gigantea	2	17	43
ashe panicum	7	–	74
autumn bentgrass	1	–	37
autumn bluegrass	9	–	87
barleys	5	–	63
beachgrass, American	1	–	38
beaked panicum	6	–	74
beakgrain, American	3	–	53
bearded bluebunch wheatgrass	1	–	35
bearded shorthusk	2	–	45
bearded skeletongrass	5	–	62
bearded wheatgrass	1	–	35
bentgrasses	1	–	36-37

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
bicknell panicum	7	–	75
big bluestem	1	–	39
blackseed needlegrass	11	–	99
blackseed ricegrass	6	–	74
blue grama	2	–	44
bluegrasses	9-10	–	87-90
bluejoint reedgrass	2	–	48
bluestems	1,2	–	38-40
blue wildrye	3	–	55
bog muhly	6	–	73
bottlebrushgrass	5	–	64
bottlebrush squirreltail	10	–	93
Bouteloua	2	14, 17	44-45
B. curtipendula	2	17	44
B. gracilis	2	17	44
B. hirsuta	2	17	45
Brachyelytrum	2	14, 17	45
B. erectum	2	17	45
bristlegrass, knotroot	10	–	92
broadleaf uniola	11	–	103
bromegrasses	2	–	46-47
Bromus	2	13, 18	46-47
B. ciliatus	2	18	46
B. inermis (exotic)	–	18	46
B. kalmii	2	18	46
B. latiglumis	2	18	46
B. *purgans*	2	18	47
brookgrass	3	–	50
broomsedge (yellowsedge bluestem)	2	–	41
brown plumegrass	4	–	58
Buchloe	2	14, 18	47
B. dactyloides	2	18	47
buffalograss	2	–	47
Calamagrostis	2	14, 18	48-49
C. canadensis	2	–	48
C. inexpansa	2	–	48
C. lacustris	2	18	48
C. montanensis	3	18	48
C. neglecta	3	–	49
C. pickeringii	3	18	49
Calamovilfa	3	14, 18	49
C. longifolia	3	18	49
Canada bluegrass (exotic)	–	–	88
Canada brome	2	–	47
Canada ricegrass	6	–	74
Canada wildrye	3	–	55
Canby bluegrass	9	–	87
cane, giant	2	–	43
Catabrosa	3	13, 18	50
C. aquatica	3	18	50
catchflygrass	5	–	65
Cinna	3	14, 19	50-51
C. arundinacea	3	19	50
C. latifolia	3	19	51
cluster fescue	4	–	59
common dune wildrye	4	–	56
common reed	9	–	86
cordgrasses	10	–	94-95
creeping mannagrass	4	–	59
cutgrass, rice	5	–	66

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
Danthonia	3	14, 19	51
D. intermedia	3	19	51
D. spicata	3	19	51
deam panicum	7	–	76
Deschampsia	3	14, 19	52
D. caespitosa	3	19	52
D. flexuosa	3	19	52
Diarrhena	3	13, 19	53
D. americana	3	19	53
Distichlis	3	12, 19	54
D. stricta	3	19	54
drooping woodreed	3	–	51
dropseeds	10-11	–	97-98
earleaf brome	2	–	46
eastern gamagrass	11	–	101
eastern mannagrass	4	–	61
elliott bluestem	1	–	38
Elymus	3	13, 19	55-56
E. canadensis	3	20	55
E. glaucus	3	20	55
E. interruptus	3	20	55
E. macounii	3	20	55
E. mollis	4	19	56
E. riparius	4	20	56
E. villosus	4	20	56
E. virginicus	4	20	56
Eragrostis	4	13, 20	56-58
E. intermedia	4	20	56
E. pilifera	4	20	57
E. spectabilis	4	20	57
E. trichodes	4	20	58
Erianthus	4	20	58
E. alopecuroides	4	20	58
E. brevibarbis	4	20	58
E. strictus	4	20	58
fall witchgrass	5	–	67
false melic	10	–	91
false quackgrass	1	–	34
fernald mannagrass	4	–	60
Festuca	4	13, 20	59
F. arundinacea (exotic)	–	21	–
F. elatior (exotic)	–	20	59
F. obtusa	4	21	59
F. ovina (seeded eastward)	–	21	–
F. paradoxa	4	21	59
F. rubra (seeded eastward)	–	21	–
F. scabrella (North Dakota only)	–	21	–
fescues	4	–	59
fringed brome	2	–	46
fringeleaf paspalum	8	–	84
Florida paspalum	9	–	85
forest muhly	6	–	72
fowl bluegrass	9	30	–
fowl mannagrass	4	–	61
foxtail barley	5	–	63
foxtails	1	–	38
gamagrass	2	–	46
gaping panicum	11	–	101
giant cane	7	–	77
Glyceria	2	13,21	59-61
G. *acutiflora*	4	21	59
G. borealis	4	21	59
G. canadensis	4	21	60

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
G. fernaldii	4	21	60
G. grandis	4	21	60
G. pallida	4	21	60
G. septentrionalis	4	21	61
G. striata	4	21	61
grama grasses	2	–	44-45
greenland bluegrass	9	–	88
green muhly	6	–	71
green needlegrass	11	–	99
grove bluegrass	9	–	87
Gymnopogon	5	14, 21	62
G. ambiguus	5	21	62
hairawn muhly	6	–	70
hair-grasses	3	–	52
hairy grama	2	–	45
hairyseed paspalum	9	–	85
hairy wildrye	4	–	56
Helictotrichon	5	14, 22	62
H. hookeri	5	22	62
heller panicum	7	–	77
hemlock panicum	8	–	83
hidden dropseed	10	–	97
Hierochloe	5	15, 22	63
H. odorata	5	22	63
Hordeum	5	13, 22	63
H. jubatum	5	22	63
H. montanense	5	22	63
huachuca panicum	7	–	77
hurrahgrass	9	–	85
Hystrix	5	13, 22	64
H. patula	5	22	64
illinois nimblewell	6	–	70
indiangrass, yellow	10	–	94
inland bluegrass	9	–	88
inland muhly	6	–	71
inland saltgrass	3	–	54
junegrass	5	–	65
kalm brome	2	–	46
Kentucky bluegrass (exotic)	–	–	89
knotroot bristlegrass	10	–	92
Koeleria	5	22	65
K. cristata	5	22	65
Leersia	5	22	65-66
L. lenticularis	5	22	65
L. oryzoides	5	22	66
L. virginica	5	22	66
leiberg panicum	7	–	78
Leptoloma	5	15, 23	67
L. cognatum	5	23	67
lindheimer panicum	7	–	78
little bluestem	1	–	40
longleaf panicum	7	–	78
longspike triodia	11	–	101
lovegrasses	4	–	56-58
macoun wildrye	3	–	55
mannagrasses	4	–	59-61
marshhay cordgrass	10	–	94
mat muhly	6	–	71
meadow fescue (exotic)	–	–	59
meadow foxtail (exotic)	–	–	–
Melica	5	13,23	68
M. mutica	5	23	68

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
M. nitens	5	23	68
M. smithii	5	23	68
melic trisetum	11	–	101
Milium	5	14, 23	69
M. effusum	5	23	69
milletgrass, American	–	–	69
Montana barley	5	–	63
mudbank paspalum	9	–	84
Muhlenbergia	5	14, 23	69-73
M. asperifolia	5	23	69
M. brachyphylla	5	23	69
M. capillaris	6	24	70
M. curtisetosa	6	24	70
M. cuspidata	6	24	70
M. frondosa	6	24	71
M. glabriflora	6	24	71
M. glomerata	6	24	71
M. mexicana	6	24	71
M. racemosa	6	24	71
M. richardsonis	6	23	71
M. schreberi	6	24	72
M. sobolifera	6	23	72
M. sylvatica	6	23-24	72
M. tenuiflora	6	24	73
M. uniflora	6	24	73
muhlys	5-6	–	69-73
narrow plumegrass	4	–	58
needle-and-thread	11	–	99
needlegrasses	11	–	99
nimblewill	6	–	72
nimblewill, Illinois	6	–	–
nodding fescue	4	–	59
nodding muhly	5	–	–
northern mannagrass	4	–	59
northern reedgrass	2	–	48
nuttall alkaligrass	10	–	90
Oryzopsis	6	14, 24	73-74
O. asperifolia	6	24	73
O. canadensis	6	24	74
O. pungens	6	24	74
O. racemosa	6	24	74
pale mannagrass	4	–	60
Panicum	6	15, 24	74-84
P. agrostoides	6	28	74
P. albemarlense	6	26	74
P. anceps	6	28	74
P. annulum	7	26	74
P. ashei	7	25, 27	74
P. auburne	7	26	75
P. barbulatum	7	26	75
P. bicknellii	7	25	75
P. boreale	7	26	75
P. boscii	7	27	75
P. calliphyllum	7	25, 26	75
P. clandestinum	7	27	76
P. columbianum	7	27	76
P. commutatum	7	27	76
P. deamii	7	27	76
P. depauperatum	7	25	76
P. dichotomum	7	26	77
P. helleri	7	27	77
P. hians	7	28	77
P. huachucae	7	26	77

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
P. implicatum	7	26	77
P. latifolium	7	27	77
P. leibergii	7	27	78
P. lindheimeri	7	–	78
P. linearifolium	7	25	78
P. longifolium	7	28	78
P. lucidum	7	26	78
P. malacophyllum	7	27	78
P. mattamuskeetense	7	25, 26	78
P. meridionale	7	26	79
P. microcarpon	8	26	79
P. nitidum	8	26	79
P. obtusum	8	28	80
P. oligosanthes	8	25, 27	80
P. ovale	8	26	80
P. perlongum	8	25	80
P. polyanthes	8	27	80
P. praecocius	8	26	81
P. pseudopubescens	8	26	81
P. ravenelii	8	25, 27	81
P. scoparioides	8	26	81
P. scoparium	8	25, 27	82
P. scribnerianum	8	27	81
P. sphaerocarpon	8	27	82
P. spretum	8	26	82
P. stipitatum	8	28	82
P. subvillosum	8	26	82
P. tennesseense	8	26	82
P. tsugetorum	8	25, 27	83
P. villosissimum	8	26	83
P. virgatum	8	28	83
P. werneri	8	25	83
P. wilcoxianum	8	27	83
P. xanthophysum	8	25, 27	84
P. yadkinense	8	26	84
Paspalum	8	15, 28	84-85
P. ciliatifolium	8	28	84
P. circulare	9	29	84
P. dissectum	9	28	84
P. floridanum	9	29	85
P. pubescens	9	28	85
P. pubiflorum (var. *glabrum)*	9	29	85
P. stramineum	9	28	85
Phalaris	9	15, 29	85
P. arundinacea	9	29	85
Phleum	9	29	85-86
P. alpinum	9	29	85
P. pratense (exotic)	–	29	86
Phragmites	9	12, 29	86
P. communis	9	29	86
pickering reedgrass	3	–	–
plains bluegrass	9	–	87
plains lovegrass	4	–	56
plains reedgrass	3	–	48
plumegrasses	4	–	58
Poa	9	13, 29	87-90
P. alsodes	9	30	87
P. arida	9	30	87
P. autumnalis	9	30	87
P. canbyi	9	30	87
P. chaixii	9	30	87
P. compressa (exotic)	–	29	88

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
P. glauca	9	30	88
P. glaucifolia	9	30	88
P. interior	9	30	88
P. languida	9	30	88
P. nemoralis (exotic)	–	30	89
P. paludigena	9	30	89
P. palustris	9	30	89
P. pratensis (exotic)	–	30	89
P. saltuensis	9	30	89
P. sylvestris	10	30	90
P. trivialis (exotic)	–	30	90
P. wolfii	10	30	90
porcupinegrass	11	–	99
poverty danthonia	3	–	51
prairie cordgrass	10	–	95
prairie dropseed	11	–	98
prairie junegrass	5	–	65
prairie sandreed	3	–	49
prairie wedgescale	10	–	96
Puccinellia	10	13, 30	90
P. airoides	10	31	90
P. distans (exotic)	–	31	90
purple lovegrass	4	–	57
purple panicum	8	–	82
purpletop	11	–	100
quackgrass (exotic)	1	–	34
rattlesnake mannagrass	4	–	60
red threeawn	2	–	42
redtop (exotic)	–	–	36
redtop panicum	6	–	74
reed canarygrass	9	–	85
reedgrasses	2-3	–	48-49
rice cutgrass	5	–	66
ricegrass	6	–	–
riverbank wildrye	4	–	56
rivergrass	10	–	92
rock muhly	6	–	72
roughleaf ricegrass	6	–	73
roughstalk bluegrass (exotic)	–	–	90
rough tridens	11	–	100
roundseed panicum	8	–	82
roundseed paspalum	9	–	84
saltgrass, inland	3	–	54
sand bluestem	1	–	–
sand dropseed	10	–	98
sandhill lovegrass	4	–	57
sand lovegrass	4	–	58
sand paspalum	9	–	85
sandreed, prairie	3	–	49
Schizachne	10	13, 31	91
S. purpurascens	10	31	91
Scolochloa	10	13, 31	92
S. festucacea	10	31	92
scribner panicum	8	–	81
seacoast bluestem	1	–	39
Setaria	10	15, 31	92
S. geniculata	10	31	92
shiny wedgescale	10	–	95
shortawn foxtail	1	–	38
shorthorn ricegrass	6	–	74
shorthusk, bearded	2	–	–
sideoats grama	2	–	44

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
silver bluestem	1	–	40
silver plumegrass	4	–	58
Sitanion	10	13, 31	93
S. hystrix	10	31	93
skeletongrass, bearded	5	–	62
slender wedgescale	10	–	95
slender wheatgrass	1	–	35
slimflower muhly	6	–	73
slimleaf panicum	7	–	78
slimstem reedgrass	3	–	–
smith melic	5	–	68
smooth brome (exotic)	–	–	46
softleaf panicum	7	–	78
Sorghastrum	10	15, 31	94
S. nutans	10	31	94
Spartina	10	14, 31	94-95
S. patens	10	31	94
S. pectinata	10	31	95
Sphenopholis	10	13, 32	95
S. intermedia	10	32	95
S. nitida	10	32	95
S. obtusata	10	32	96
spike oat	5	–	62
spike trisetum	11	–	102
Sporobolus	10	14, 32	96-98
S. airoides	10	32	96
S. asper	10	32	97
S. clandestinus	10	32	97
S. cryptandrus	10	32	98
S. heterolepis	11	32	98
squirreltail, bottlebrush	10	–	93
Stipa	11	14, 32	99
S. avenacea	11	32	99
S. comata	11	32	99
S. spartea	11	32	99
S. viridula	11	32	99
stonyhills muhly	6	–	70
stout woodreed	3	–	50
sweetgrass	5	–	63
switchgrass	8	–	83
tall dropseed	10	–	97
Tennessee panicum	8	–	82
Texas wildrye	3	–	55
thickspike wheatgrass	1	–	34
threeawns	2	–	41-42
threeflower melic	5	–	68
timber danthonia	3	–	51
timothy (exotic)	–	–	86
torrey bluegrass	9	–	88
Tridens	11	13, 32	100-101
T. chapmani	11	33	100
T. elongatus	11	33	100
T. flavus	11	33	100
T. strictus	11	33	101
Tripsacum	11	33	101
T. dactyloides	11	33	101
Trisetum	11	13-14, 33	101-102
T. melicoides	11	33	101
T. spicatum	11	33	102
tufted hairgrass	3	–	52
twoflower melic	5	–	68

Grass species	Annotated list Page	Taxonomic key Page	Illustrations Page
Uniola	11	13, 33	103
U. latifolia	11	33	103
uniola, broadleaf	11	–	103
velvet panicum	8	–	82
vine-mesquite	8	–	80
Virginia wildrye	4	–	56
water foxtail	1	–	38
wavy hair-grass	3	–	52
weeping alkaligrass (exotic)	–	–	90
werner panicum	8	–	83
western wheatgrass	1	–	35
wheatgrasses	1	–	34-35
witchgrass, fall	–	–	67
whitegrass	5	–	66
wilcox panicum	8	–	83
wildryes	3-4	–	55-56
winter bentgrass	1	–	36
wirestem muhly	6	–	71
wolfs bluegrass	10	–	90
wood bluegrass	–	–	89
woodland bluegrass	10	–	90
woodreeds	3	–	50-51
woollysheath threeawn	2	–	41
yellow indiangrass	10	–	94
yellowsedge bluestem (broomsedge)	2	–	–

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